802.11g Super Cardbus

User’s Manual

Version 1.0_September 2004

Copyright Statement

Regulatory Information

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the use is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different form that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: To assure continued compliance, (example-use only shielded interface cables when connecting to computer or peripheral devices) any changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device many not cause harmful interference, and

(2) This device may accept any interference received, including interference that may cause undesired operation.

Important Notice:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Table of Contents

1 Introduction

1.1 The WLAN 802.11g

802.11g Cardbus belongs to 54 Mbps wireless networking standard and is almost five times faster than the widely deployed 802.11b products used at homes, business or public wireless hotspots around the country. However, 802.11g and 802.11b share the same 2.4 GHz radio band, 802.11g devices can also work with existing 11 Mbps 802.11b equipment.

Your new 802.11g Cardbus has both standards built in, so you can connect your notebook to existing 802.11b infrastructure and also the new screaming fast 802.11g network.

The included Setup Wizard will guide you, step by step, through configuring the Cardbus to your network's settings. Then just slide the Cardbus into your notebook's PC Card slot and enjoy network access with your notebook computer, while retaining true mobility.

Once you're connected, you can keep in touch with your friends, sending them e-mails, accessing the Internet, sharing files and other resources like printers and network storage with other computers on the network, wherever you surf. At home you can log on web pages or use instant messaging to chat with friends while sitting out on the patio. You'll also be able to connect with any of the growing number of public wireless hotspots springing up in coffee shops, airport lounges, hotels and convention centers. Since those hotspots upgrade to the new high-speed 802.11g standard, you'll be ready to take advantage of the increased speeds. Get linked to the current-standard 802.11b networks and be prepared for the future with your 802.11g Cardbus.

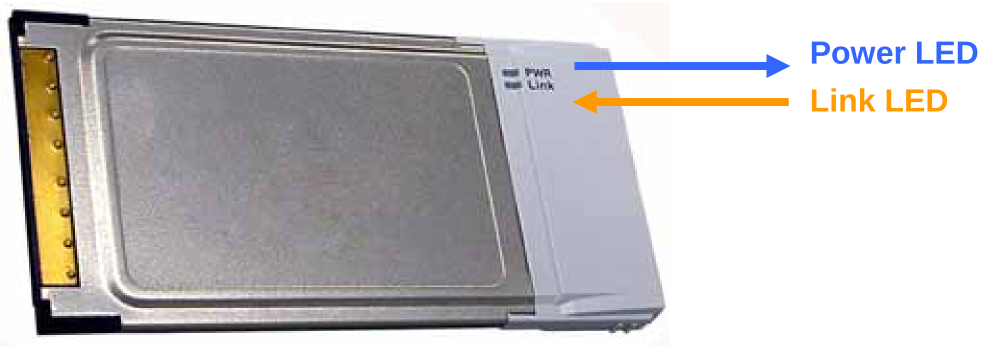
1.2 Features

- IEEE 802.11g Standard Support
- 32-bit Cardbus Interface
- Fully WHQL Testing
- Wi-Fi Compliant
- Wireless Connection between Two or More PCs for Home or Office Use
- Sharing Internet Access and Peripherals through Access Point
- Easily Join Multi-Player Games and Share Files
- Extended Range Supporting
- Fully Interoperability, Feature and Regulatory Certification
- Support 802.1x, AES-CCM and TKIP, including Power Saving Mode.
- 64/128/152-bit WEP Encryption
- Super G Deliver Wired Speeds with Backward Compatibility

1.3 Package Contents

- WLAN 802.11g Cardbus
- Installation Software CD
- User’s Manual

1.4 The Cardbus LED Indicators



Item	LED	Description
Power (PWR)	Green	The Power LED lights up when the Cardbus is powered on.
Link	Green	The Link LED lights up and stay solid when the Cardbus is inserted correctly and a link is established with your notebook.
	Flash	The Link LED flashes when data is transmitted or received.

2 Quick Start Guide

This chapter helps you quickly install the software and hardware and easily connects to the existing wireless network. For details, please refer to the following chapters

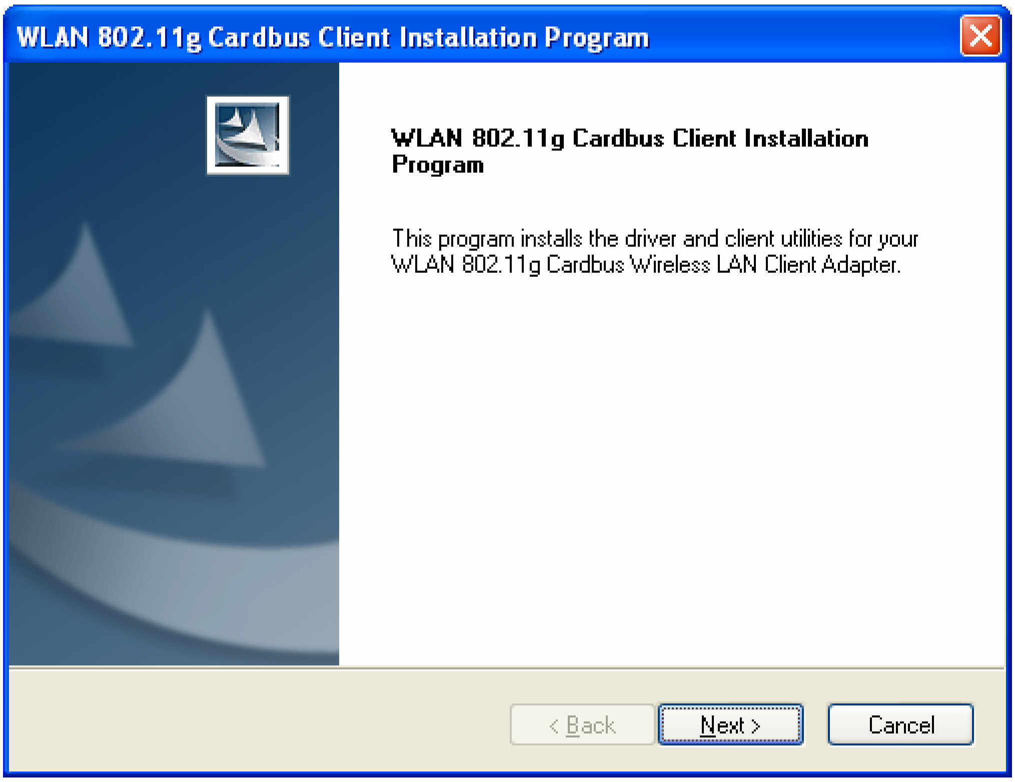
Note: Do not insert the adapter into the Cardbus slot before the driver installation.

Note: To re-install the driver, please first uninstall the previously installed driver.

2.1 Installation

(1) Insert the Installation Software CD into the CD-Rom Drive.

(2) Click **Next**.

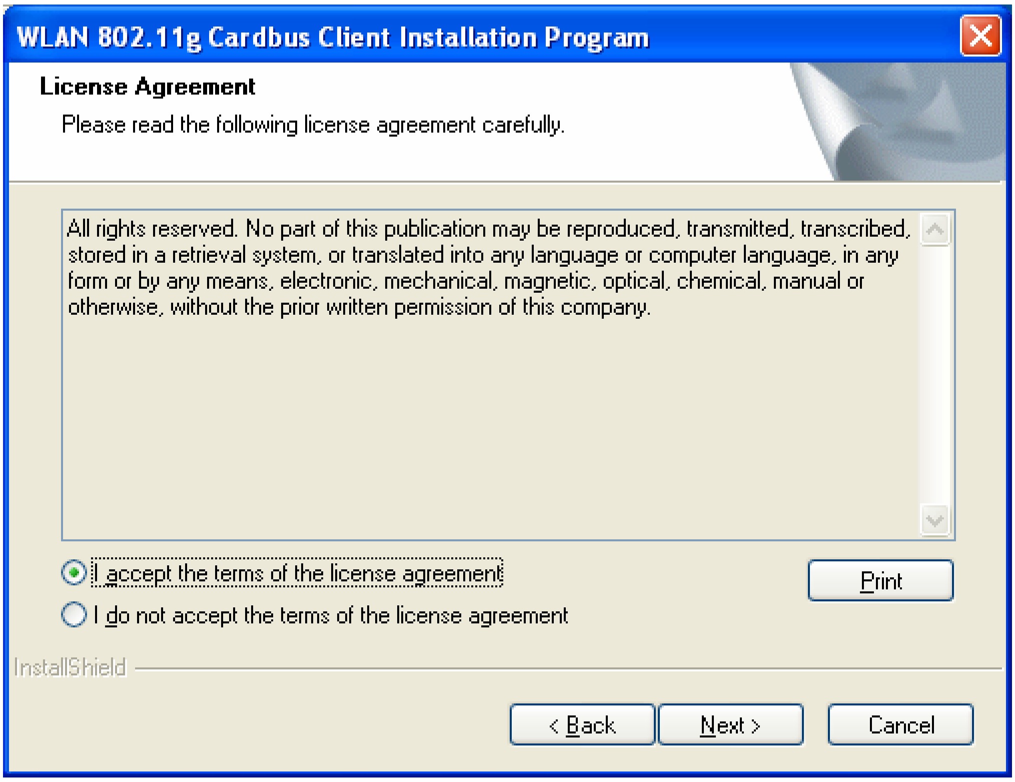


WLAN 802.11g Cardbus Client Installation Program

WLAN 802.11g Cardbus Client Installation Program

This program installs the driver and client utilities for your WLAN 802.11g Cardbus Wireless LAN Client Adapter.

(3) Read the license agreement and choose “I accept the terms of the license agreement”, and then click **Next**.



WLAN 802.11g Cardbus Client Installation Program

License Agreement

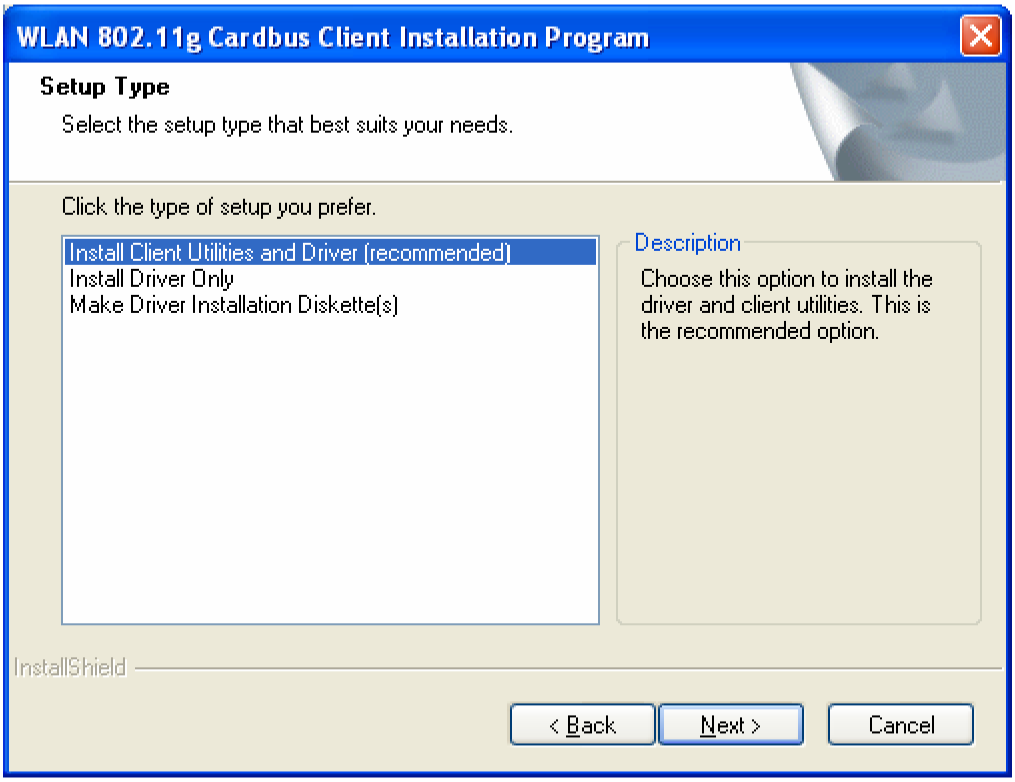
Please read the following license agreement carefully.

All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual or otherwise, without the prior written permission of this company.

● I accept the terms of the license agreement

○ I do not accept the terms of the license agreement

(4) Highlight "Install Client Utilities and Driver (recommended)" and click **Next**. Users can choose to install only Driver; or to make driver installation diskettes.



WLAN 802.11g Cardbus Client Installation Program

Setup Type

Select the setup type that best suits your needs.

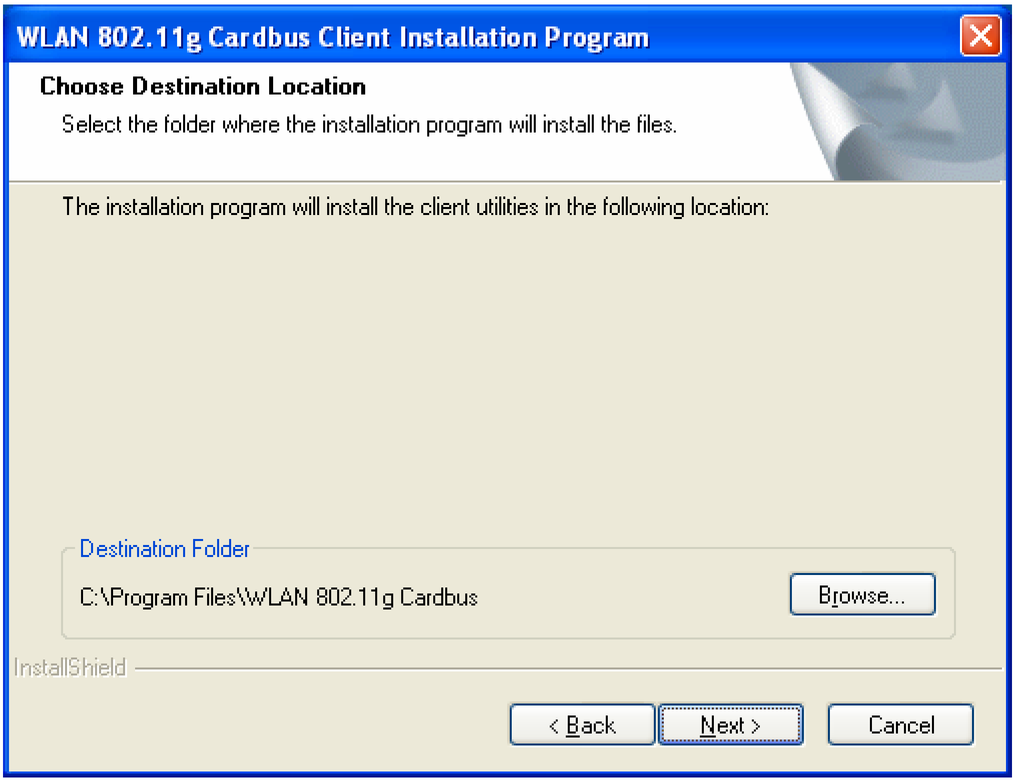
Click the type of setup you prefer.

- Install Client Utilities and Driver (recommended)
- Install Driver Only
- Make Driver Installation Diskette(s)

Description

Choose this option to install the driver and client utilities. This is the recommended option.

(5) Click **Next** to continue or click **Browse** to choose a destination folder.



WLAN 802.11g Cardbus Client Installation Program

Choose Destination Location

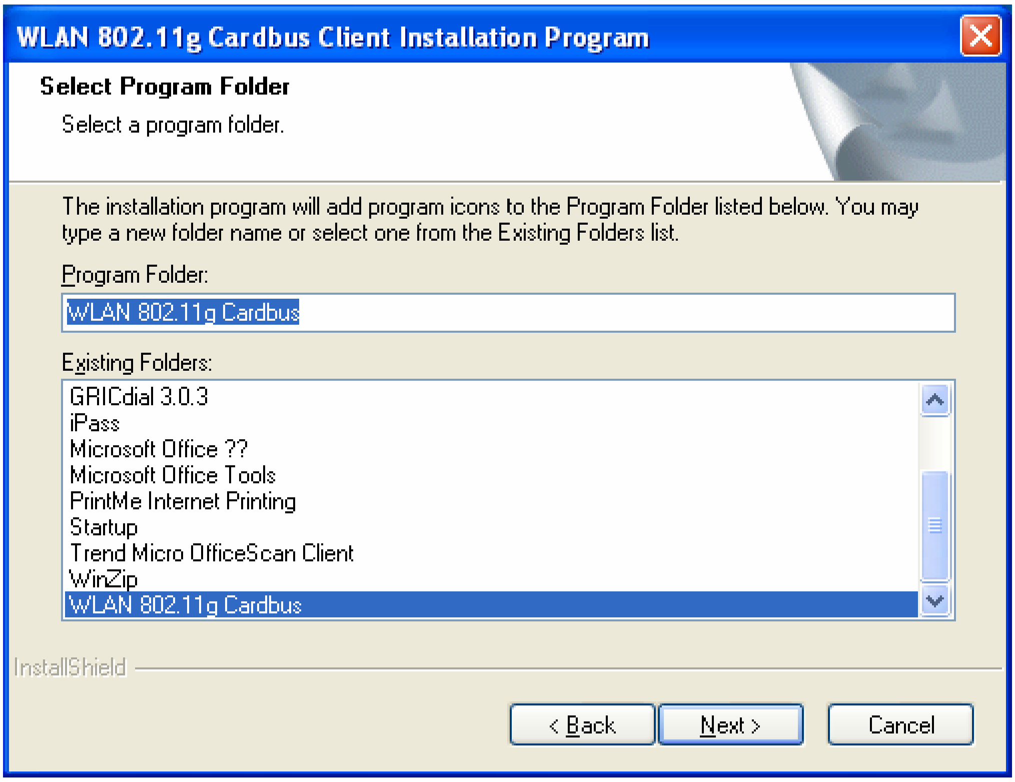
Select the folder where the installation program will install the files.

The installation program will install the client utilities in the following location:

Destination Folder

C:\Program Files\WLAN 802.11g Cardbus

(6) Click **Next**.



WLAN 802.11g Cardbus Client Installation Program

Select Program Folder

Select a program folder.

The installation program will add program icons to the Program Folder listed below. You may type a new folder name or select one from the Existing Folders list.

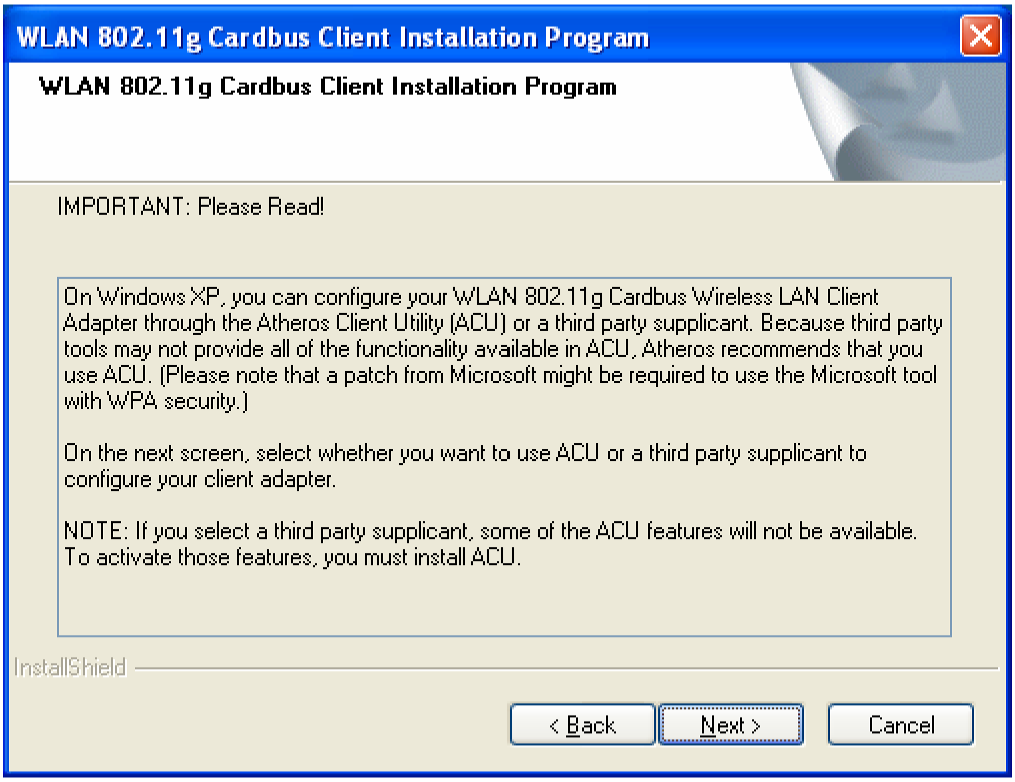
Program Folder:

WLAN 802.11g Cardbus

Existing Folders:

GRICdial 3.0.3
iPass
Microsoft Office ??
Microsoft Office Tools
PrintMe Internet Printing
Startup
Trend Micro OfficeScan Client
WinZip
WLAN 802.11g Cardbus

(7) Read the important notice and click **Next**.



WLAN 802.11g Cardbus Client Installation Program

WLAN 802.11g Cardbus Client Installation Program

IMPORTANT: Please Read!

On Windows XP, you can configure your WLAN 802.11g Cardbus Wireless LAN Client Adapter through the Atheros Client Utility (ACU) or a third party supplicant. Because third party tools may not provide all of the functionality available in ACU, Atheros recommends that you use ACU. (Please note that a patch from Microsoft might be required to use the Microsoft tool with WPA security.)

On the next screen, select whether you want to use ACU or a third party supplicant to configure your client adapter.

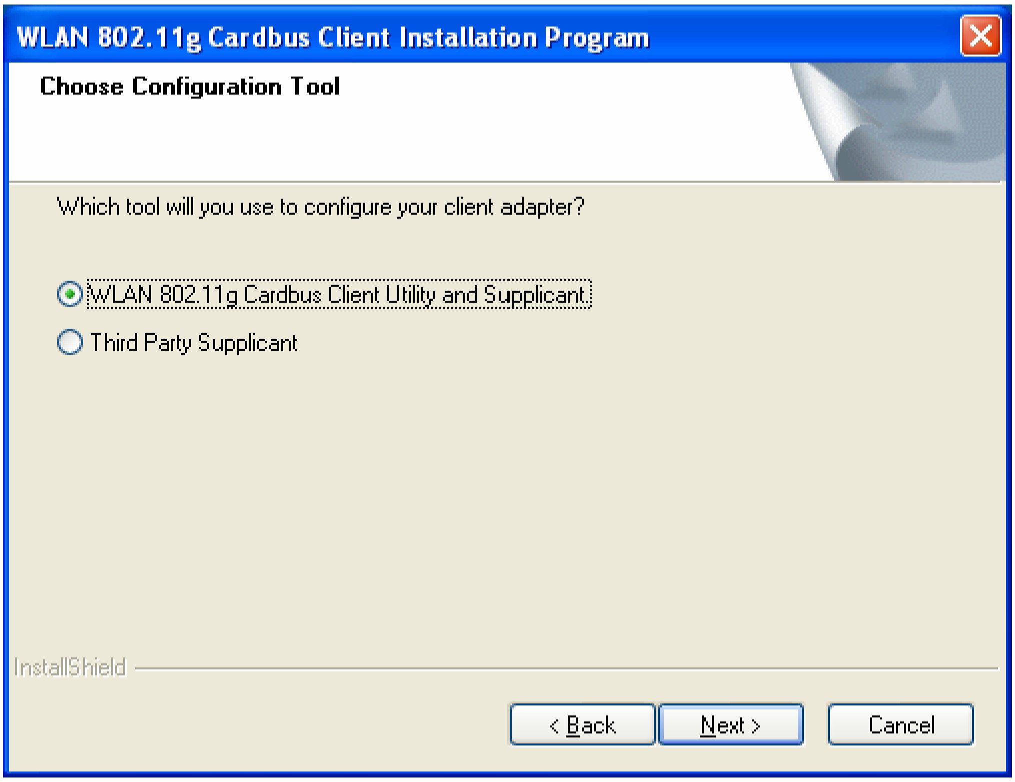
NOTE: If you select a third party supplicant, some of the ACU features will not be available. To activate those features, you must install ACU.

The notice says:
On Windows XP, you can configure your WLAN 802.11g Cardbus Wireless LAN Client Adapter through the Atheros Client Utility (ACU) or a third party supplicant. Because third party tools may not provide all of the functionality available in ACU, Atheros recommends that you use ACU. (Please note that a patch from Microsoft might be required to use the Microsoft tool with WPA security.)

On the next screen, select whether you want to use ACU or a third party supplicant to configure your client adapter.

NOTE: If you select a third party supplicant, some of the ACU features will not be available. To activate those features, you must install ACU.

Select "WLAN 802.11g Cardbus Client Utility and Supplicant" or "Third Party Supplicant" and click **Next**.



WLAN 802.11g Cardbus Client Installation Program

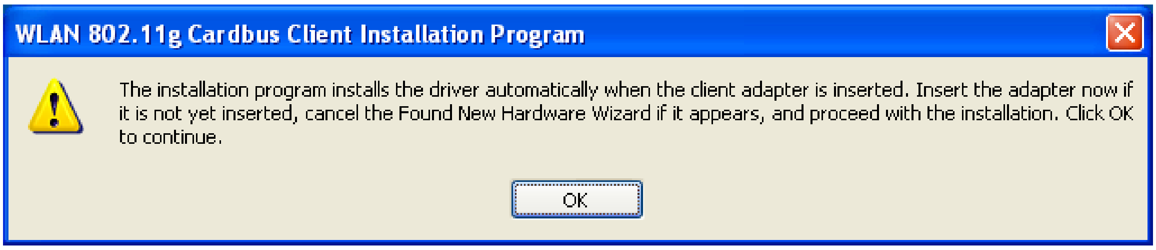
Choose Configuration Tool

Which tool will you use to configure your client adapter?

● WLAN 802.11g Cardbus Client Utility and Supplicant

○ Third Party Supplicant

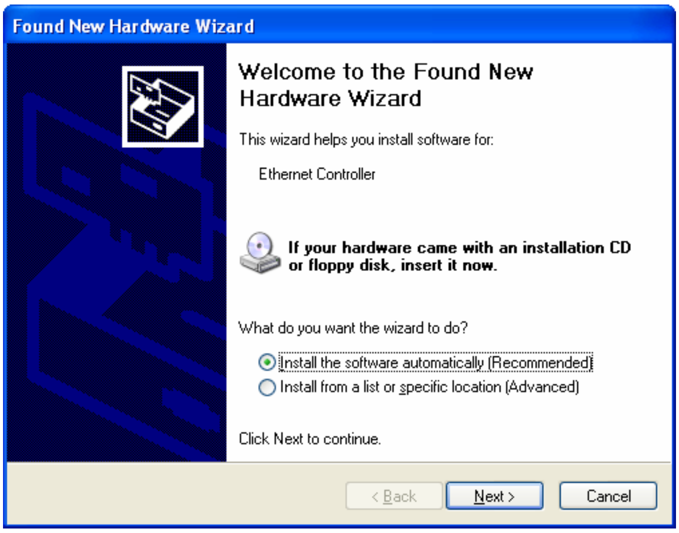
(8) Insert the adapter into the Cardbus slot, and click **OK**.



WLAN 802.11g Cardbus Client Installation Program

The installation program installs the driver automatically when the client adapter is inserted. Insert the adapter now if it is not yet inserted, cancel the Found New Hardware Wizard if it appears, and proceed with the installation. Click OK to continue.

Cancel the Found News Hardware Wizard if appears.



Found New Hardware Wizard

Welcome to the Found New Hardware Wizard

This wizard helps you install software for:

Ethernet Controller

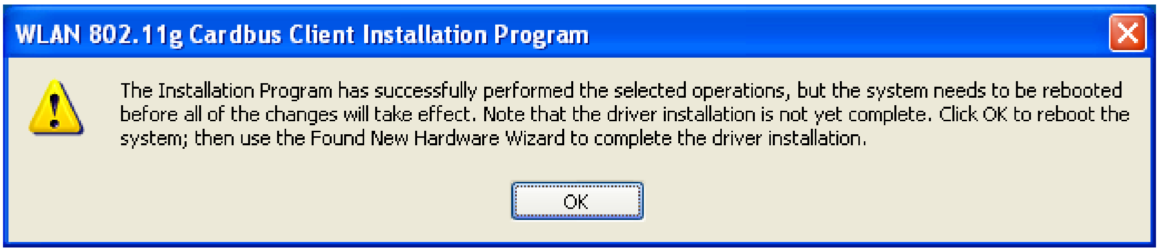
If your hardware came with an installation CD or floppy disk, insert it now.

What do you want the wizard to do?

● Install the software automatically (Recommended)
○ Install from a list or specific location (Advanced)

Click Next to continue.

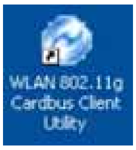
(9) Click **OK** and the system will reboot.



WLAN 802.11g Cardbus Client Installation Program

The Installation Program has successfully performed the selected operations, but the system needs to be rebooted before all of the changes will take effect. Note that the driver installation is not yet complete. Click OK to reboot the system; then use the Found New Hardware Wizard to complete the driver installation.

(10) The shortcut icon appears on the desktop of you PC.



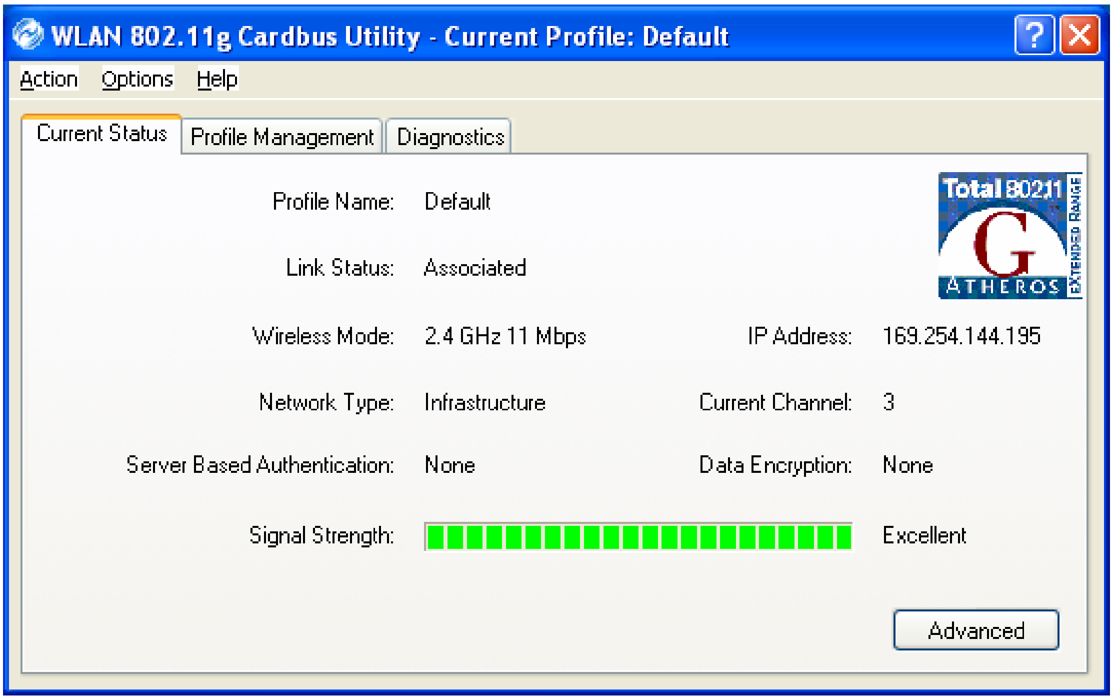
Additional Setup Processes

During software installation procedure, each operating system may prompt different specific options:

- **Windows 98SE:** The system will request the original Windows CD during the installation process. When the installation is finished, you will have to restart your computer.
- **Windows Me:** Please restart your Notebook PC when the installation is finished.
- **Windows 2000/XP:** Click **Cancel** when Found New Hardware Wizard appears. Restart your Notebook PC when the installation is finished.

2.2 Connecting to a network

When the adapter is inserted, double click the shortcut icon on the desktop of the PC and the adapter automatically connects to the best-performed un-secured network. The Profile Name shows “Default”.



WLAN 802.11g Cardbus Utility - Current Profile: Default
Action
Options
Help
Current Status
Profile Management
Diagnostics
Total 802.11 G ATHEROS EXTENDED RANGE
Advanced

Profile Name: Default

Link Status: Associated

Wireless Mode: 2.4 GHz 11 Mbps

IP Address: 169.254.144.195

Network Type: Infrastructure

Current Channel: 3

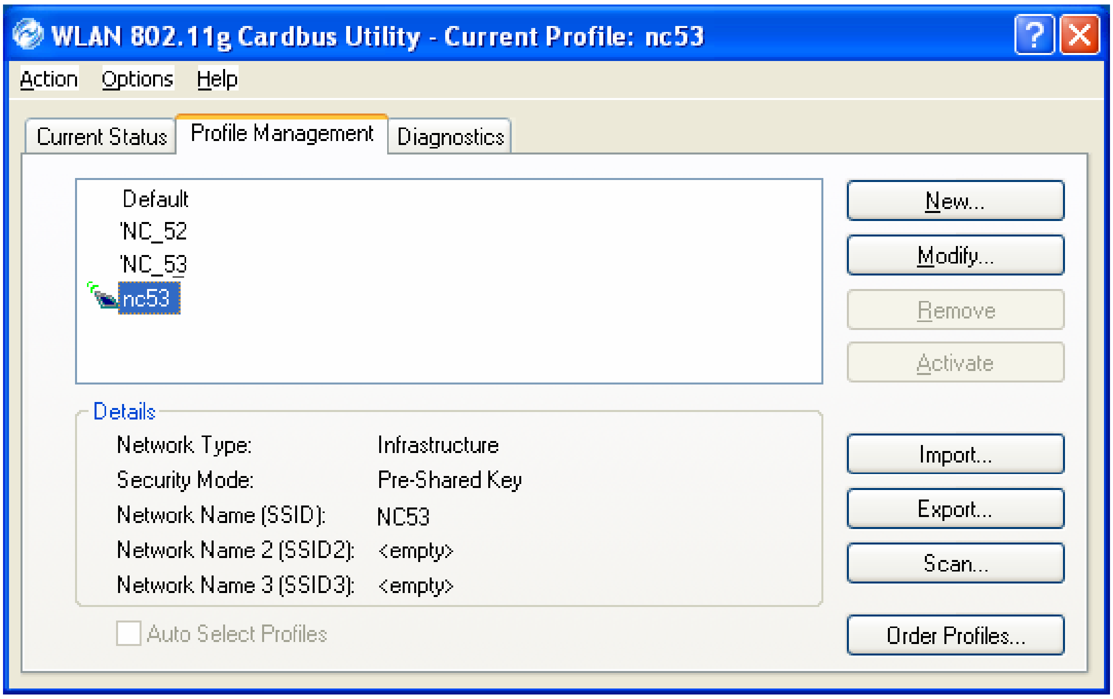
Server Based Authentication: None

Data Encryption: None

Signal Strength: Excellent

If you would like to connect to a specific network, follow the steps below:

(1) Open Profile Management tab. Click **Scan**.



WLAN 802.11g Cardbus Utility - Current Profile: nc53

Default
'NC_52
'NC_53
nc53

Details

Network Type: Infrastructure
Security Mode: Pre-Shared Key
Network Name (SSID): NC53
Network Name 2 (SSID2): <empty>
Network Name 3 (SSID3): <empty>

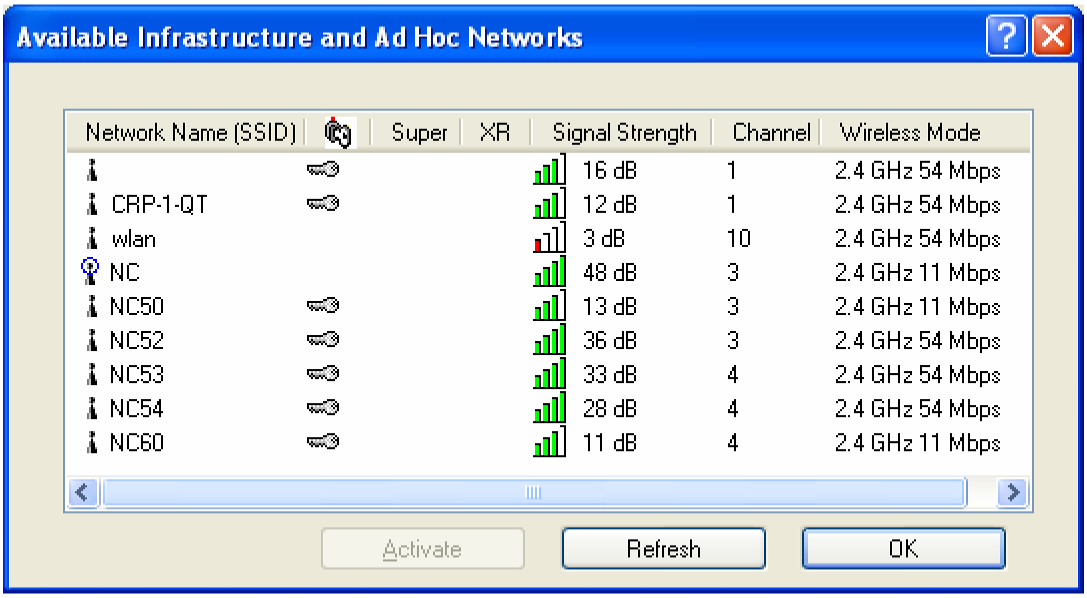
□ Auto Select Profiles

(2) All available networks in vicinity are listed. The one marked with is the current connected network.

: Ad-Hoc network

: Infrastructure network

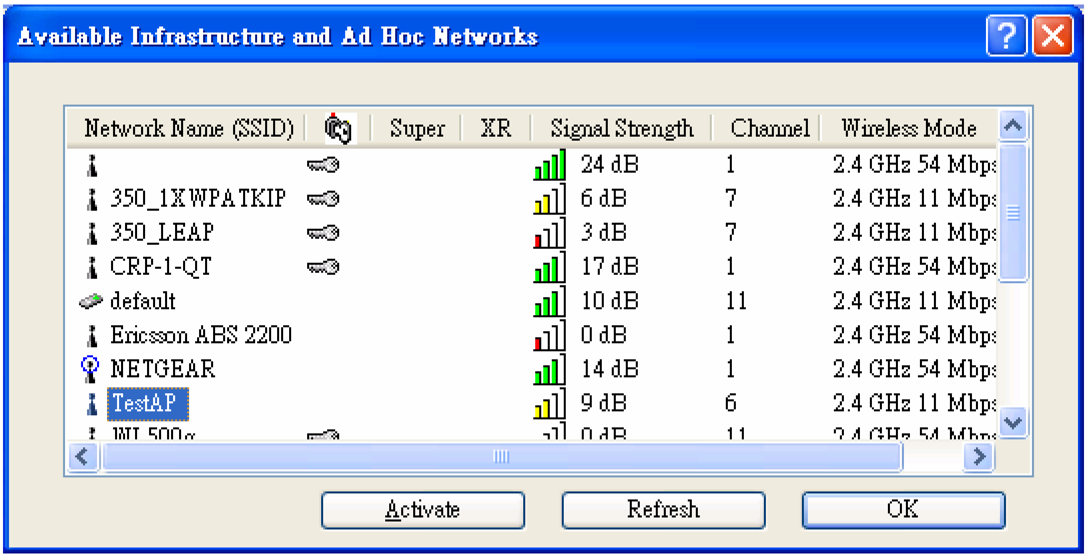
: Secured network



Available Infrastructure and Ad Hoc Networks

Network Name (SSID)	🔑	Super	XR	Signal Strength	Channel	Wireless Mode
	🔑			16 dB	1	2.4 GHz 54 Mbps
CRP-1-QT	🔑			12 dB	1	2.4 GHz 54 Mbps
wlan				3 dB	10	2.4 GHz 54 Mbps
NC				48 dB	3	2.4 GHz 11 Mbps
NC50	🔑			13 dB	3	2.4 GHz 11 Mbps
NC52	🔑			36 dB	3	2.4 GHz 54 Mbps
NC53	🔑			33 dB	4	2.4 GHz 54 Mbps
NC54	🔑			28 dB	4	2.4 GHz 54 Mbps
NC60	🔑			11 dB	4	2.4 GHz 11 Mbps

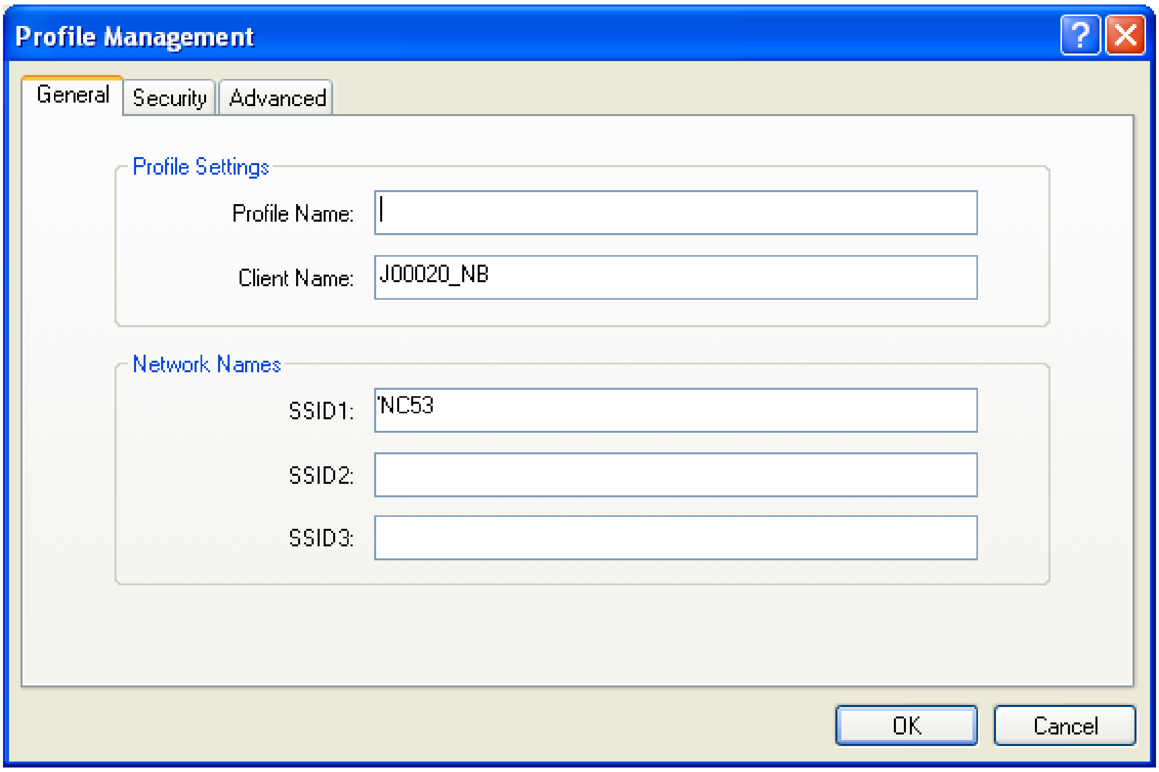
(3) Click the designated Network Name (SSID) and click **Activate**.



Available Infrastructure and Ad Hoc Networks

Network Name (SSID)		Super	XR	Signal Strength	Channel	Wireless Mode
	🔑			24 dB	1	2.4 GHz 54 Mbp
350_1XWPATKIP	🔑			6 dB	7	2.4 GHz 11 Mbp
350_LEAP	🔑			3 dB	7	2.4 GHz 11 Mbp
CRP-1-QT	🔑			17 dB	1	2.4 GHz 54 Mbp
default				10 dB	11	2.4 GHz 11 Mbp
Ericsson ABS 2200				0 dB	1	2.4 GHz 54 Mbp
NETGEAR				14 dB	1	2.4 GHz 54 Mbp
TestAP				9 dB	6	2.4 GHz 11 Mbp
WL500g	🔑			0 dB	11	2.4 GHz 54 Mbp

(4) General tab is opened automatically. Edit the Profile Name, Client Name and SSID. See Chapter 5 Status Information/Diagnostics.



Profile Management

Profile Settings

Profile Name:

Client Name: J00020_NB

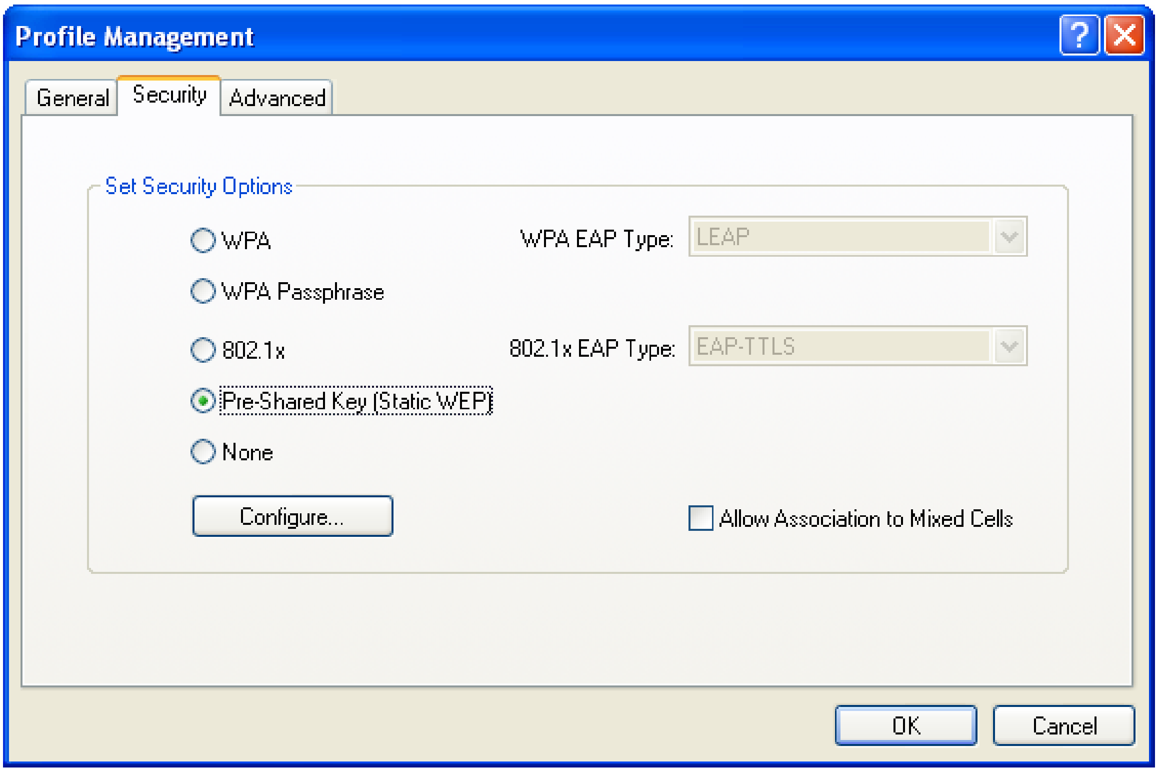
Network Names

SSID1: NC53

SSID2:

SSID3:

(5) Open Security tab. Contact the network administrator for the security settings. See Chapter 4 Security for details.



Set Security Options

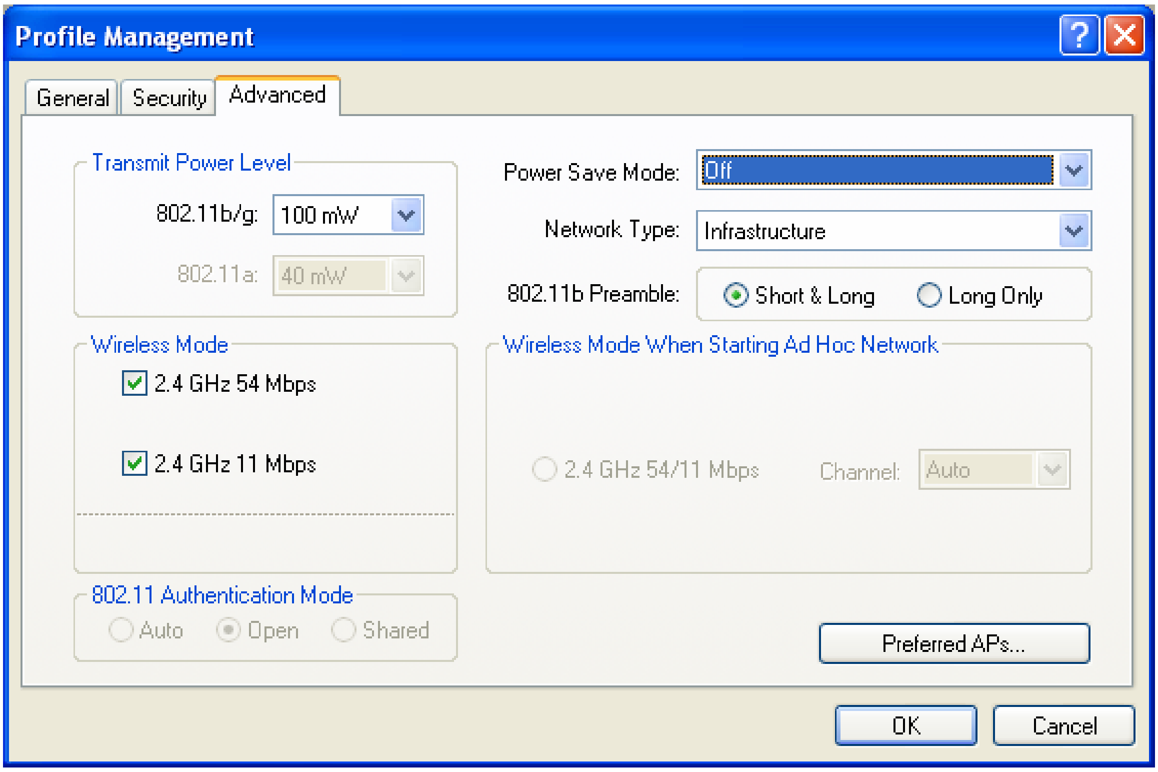
○ WPA
○ WPA Passphrase
○ 802.1x
● Pre-Shared Key (Static WEP)
○ None

WPA EAP Type: LEAP

802.1x EAP Type: EAP-TTLS

□ Allow Association to Mixed Cells

(6) Open Advanced tab to configure Transmit Power Level, Wireless Mode, 802.11 Authentication Mode, Power Save Mode, Network Type, 802.11b Preamble and Preferred APs. See Chapter 5 Status Information/ Diagnostics for details.



Transmit Power Level

802.11b/g: 100 mW

802.11a: 40 mW

Power Save Mode: Off

Network Type: Infrastructure

802.11b Preamble: ● Short & Long ○ Long Only

Wireless Mode

☑ 2.4 GHz 54 Mbps

☑ 2.4 GHz 11 Mbps

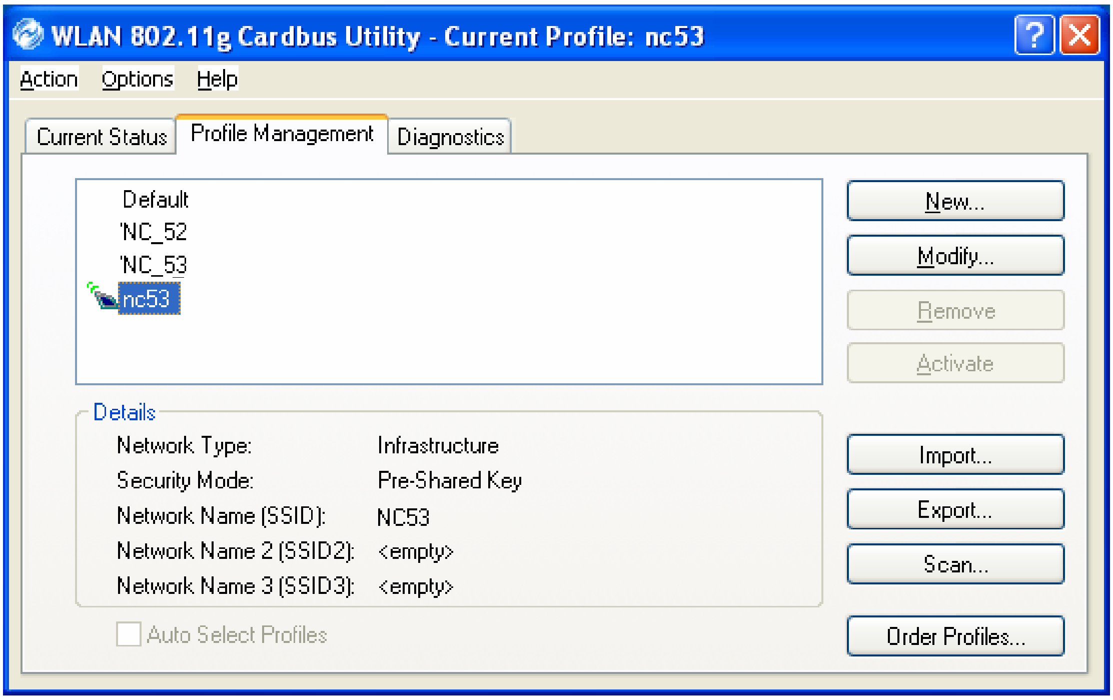
Wireless Mode When Starting Ad Hoc Network

○ 2.4 GHz 54/11 Mbps Channel: Auto

802.11 Authentication Mode

○ Auto ● Open ○ Shared

(7) Click **OK** and you should see the chosen network is marked with the connected icon. See Chapter 3 Profile Management for details.



Default
'NC_52
'NC_53
nc53

Details

Network Type: Infrastructure
Security Mode: Pre-Shared Key
Network Name (SSID): NC53
Network Name 2 (SSID2): <empty>
Network Name 3 (SSID3): <empty>

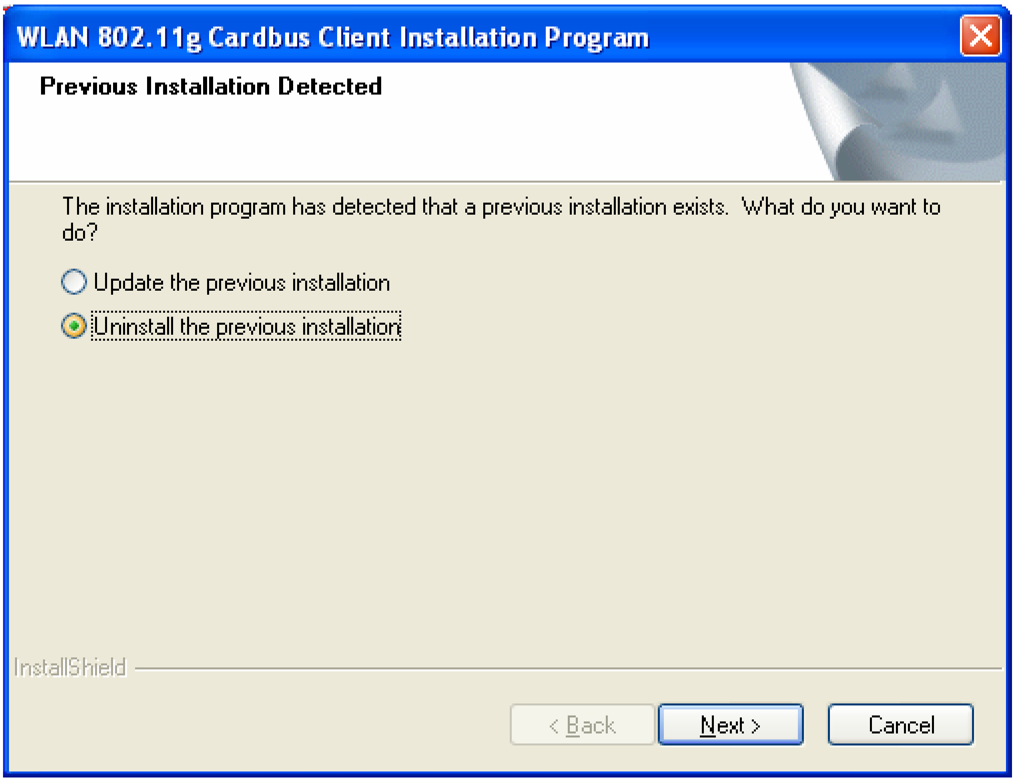
2.3 Uninstallation

Note: Before uninstallation, please close all running programs.

(1) In Control Panel, open **Add or Remove Programs**.

(2) Scroll to the installation program, and click **Change/Remove**.

(3) Choose "Uninstall the previous installation" and click **Next**.



WLAN 802.11g Cardbus Client Installation Program

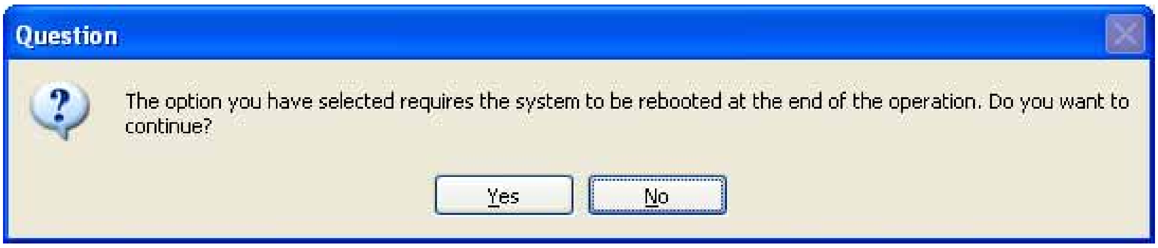
Previous Installation Detected

The installation program has detected that a previous installation exists. What do you want to do?

○ Update the previous installation

● Uninstall the previous installation

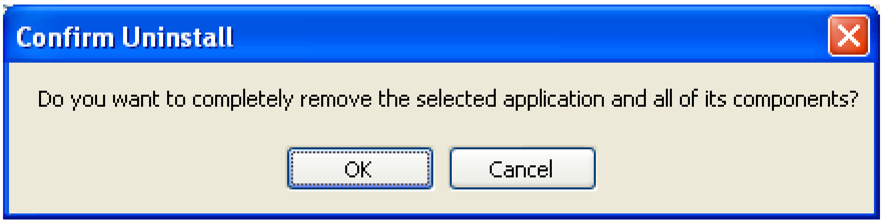
(4) Click **Yes**.



Question

The option you have selected requires the system to be rebooted at the end of the operation. Do you want to continue?

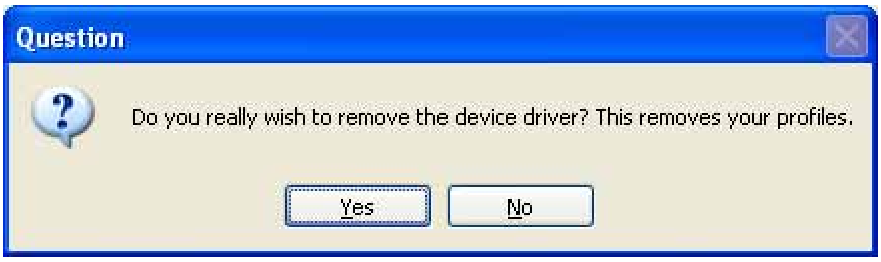
(5) Click **OK**.



Confirm Uninstall

Do you want to completely remove the selected application and all of its components?

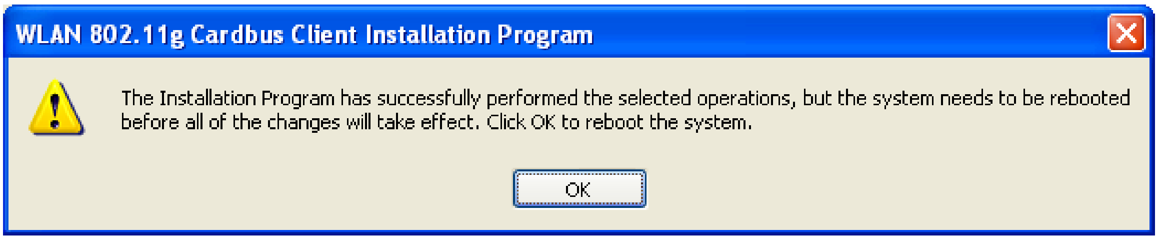
(6) Click **Yes**.



Question

Do you really wish to remove the device driver? This removes your profiles.

(7) Click OK to reboot your Notebook PC.



WLAN 802.11g Cardbus Client Installation Program

The Installation Program has successfully performed the selected operations, but the system needs to be rebooted before all of the changes will take effect. Click OK to reboot the system.

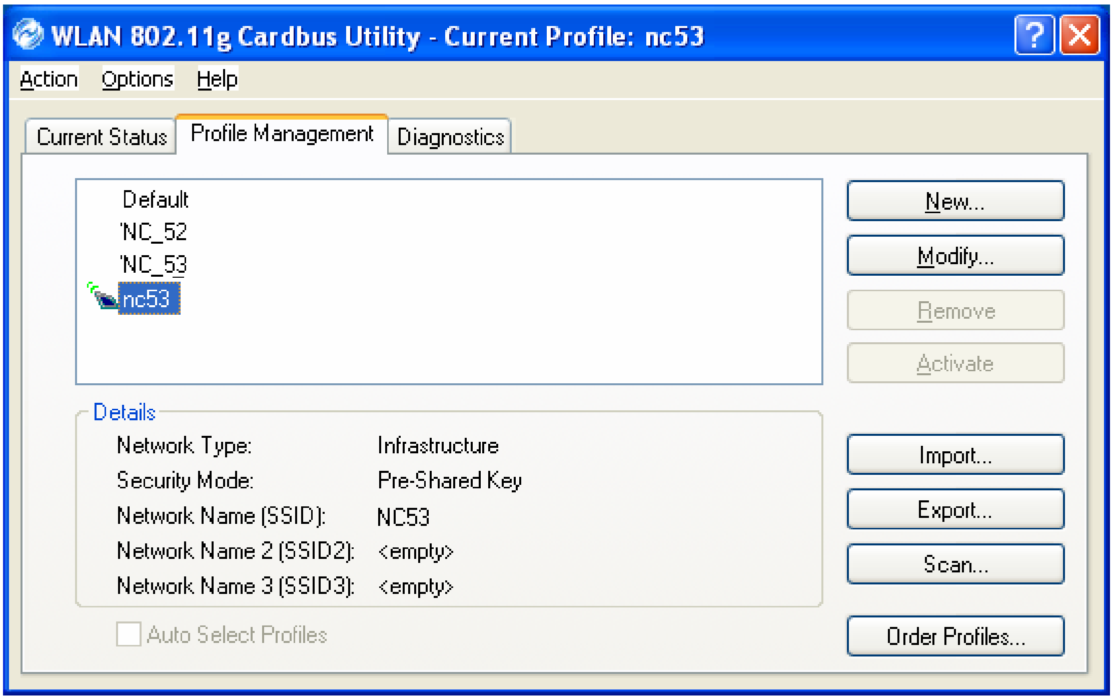
3. Profile Management

3.1 Overview

Your WLAN 802.11g Cardbus Utility is a user-mode utility which is designed to help you checking the Current Status, to edit and add Configuration Profiles, also to display Diagnostics pertaining to a selected network interface card (wireless adapter).

3.2 Accessing to Profile Management

1. Open “WLAN 802.11g Cardbus Utility” by double clicking the shortcut icon on the desktop.
2. Select **Profile Management** tab.



Default
NC_52
NC_53
nc53

Details

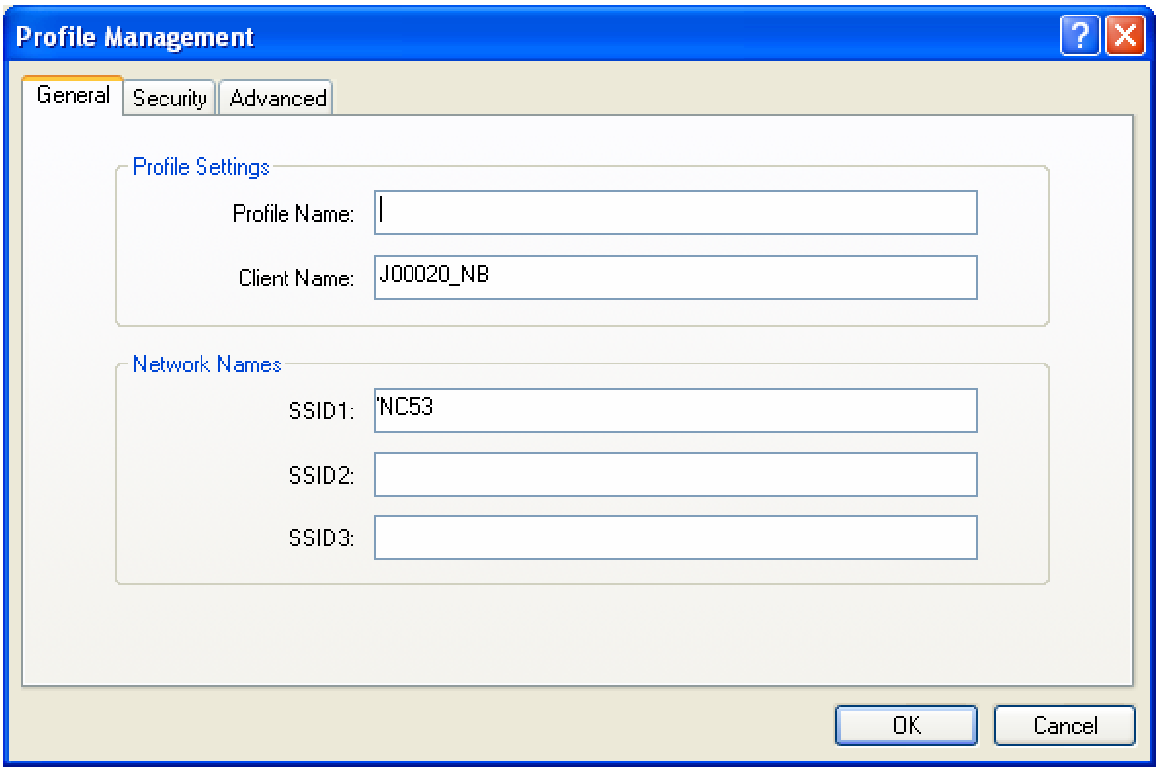
Network Type: Infrastructure
Security Mode: Pre-Shared Key
Network Name (SSID): NC53
Network Name 2 (SSID2): <empty>
Network Name 3 (SSID3): <empty>

3. Configure the wireless network adapter (wireless card) from the **Profile Management** tab.

- The wireless network adapter works in either Infrastructure Mode (which uses an Access Point) or Ad-Hoc Mode (a group of stations participating in the wireless LAN).

3.2.1 Creating or Modifying a Configuration Profile

1. To add a New configuration profile, click **New** on the Profile Management tab. To modify a configuration profile, select the configuration from the Profile list and click the **Modify** button.
2. The Profile Management dialog box displays the **General**, **Security** and **Advanced** tab.
3. Edit the fields in the **General** tab to configure the configuration profile.



Profile Management

General | Security | Advanced

Profile Settings

Profile Name:

Client Name: J00020_NB

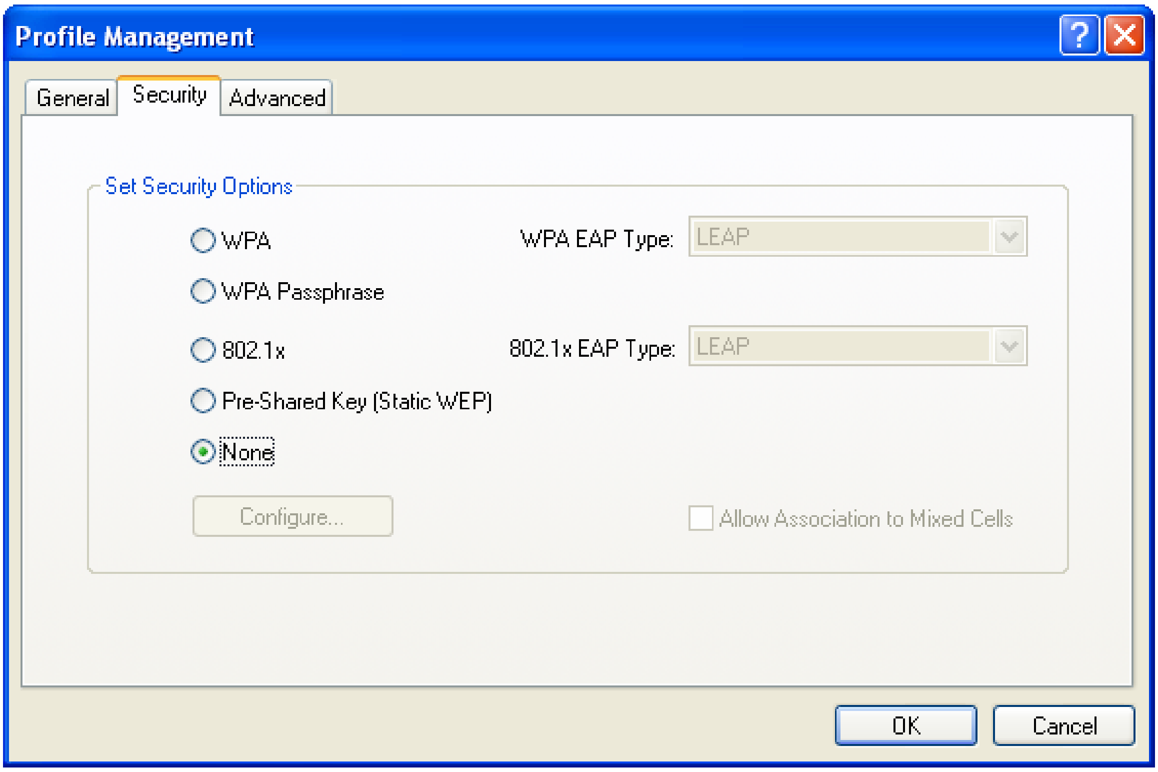
Network Names

SSID1: 'NC53

SSID2:

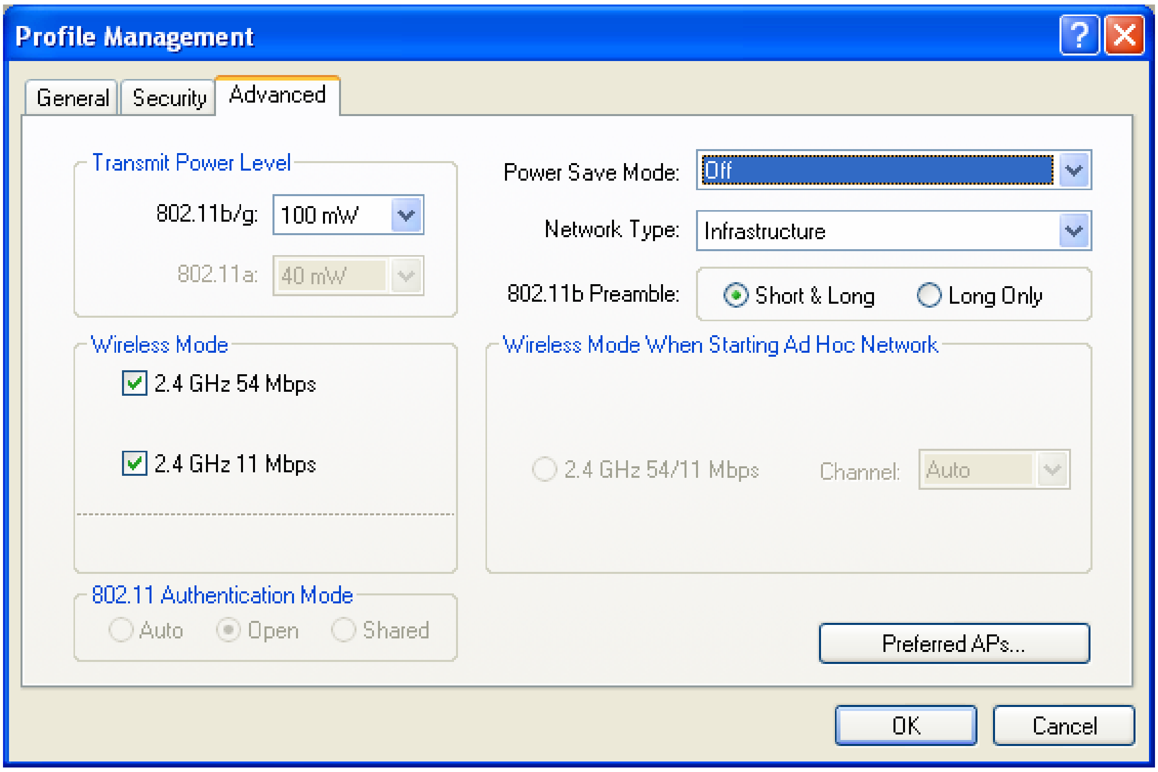
SSID3:

4. Edit the fields in the **Security** tab to configure the configuration profile.



- **WPA**: Enables the use of Wi-Fi Protected Access (WPA).
- **WPA Passphrase**: Enables WPA Passphrase security. Click on the **Configure** button and fill in the WPA Passphrase.
- **802.1x**: Enables 802.1x security. This option requires IT administration.
- **Pre-Shared Key (Static WEP)**: Enables the use of pre-shared keys that are defined on both the access point and the station.
- **None**: No security (not recommended).

5. Edit the fields in the **Advanced** tab to configure the configuration profile.



Transmit Power Level
802.11b/g: 100 mW
802.11a: 40 mW

Power Save Mode: Off
Network Type: Infrastructure
802.11b Preamble: ● Short & Long ○ Long Only

Wireless Mode
☑ 2.4 GHz 54 Mbps
☑ 2.4 GHz 11 Mbps

Wireless Mode When Starting Ad Hoc Network
○ 2.4 GHz 54/11 Mbps Channel: Auto

802.11 Authentication Mode
○ Auto ● Open ○ Shared

- **Transmit Power Level**: Selects the transmit power level for 802.11b/g or 802.11a in mW. Actual transmit power may be limited by regulatory domain or hardware limitations.
- **Power Save Mode**: Specify:

✓ **Maximum** mode: causes the access point to buffer incoming messages for the wireless adapter. The adapter up periodically polls the access point to see if any messages are waiting.

✓ **Normal** mode: uses maxim when retrieving a large number of packets, then switches back to power save mode after retrieving the packets.

✓ **Off**: turns power saving off, thus powering up the wireless adapter continuously for a short message response time.

- **Network Type**: Specifies the network as either Infrastructure or Ad Hoc.
- **802.11b Preamble**: Specifies the preamble setting in 802.11b. The default setting is **Short & Long** (access point mode) , which allows both short and long headers in the 802.11b frames. The adapter can only use short radio headers if the access point supports and uses them. Set to **Long Only** to override allowing short frames.

- **Wireless Mode**: Specifies 5GHz 54Mbps, 2.4GHz 54Mbps, 2.4GHz 11Mbps, or Super A/G operation in an access point network. The wireless adapter must match the wireless mode of the access point it associates to.
- **Wireless Mode when Starting Ad Hoc Network**: Specifies 5GHz 54Mbps, 5GHz 108Mbps, or 2.4GHz 54/11Mbps, to start an Ad Hoc network if no matching network name is found after scanning all available modes. This mode also allows selection of the channel the wireless adapter uses. The channels available depend on the regulatory domain. If the adapter finds no other ad hoc adapters, this selection specifies which channel with the adapter starts the Ad Hoc network with. The wireless adapter must match the wireless mode of the access point it associates to.
- **802.11a Authentication Mode**: Select what mode the wireless adapter uses to authenticate to an access point:
- ✓ **Auto**: causes the adapter to attempt authentication using shared, but switches it to open authentication if shared fails.
- ✓ **Open**: enables an adapter to attempt authentication regardless of its WEP settings. It will only associate with the access point if the WEP keys on both the adapter and the access point match.
- ✓ **Shared**: only allows the adapter to associate with access points that have the same WEP key.

3.2.2 Removing a Profile

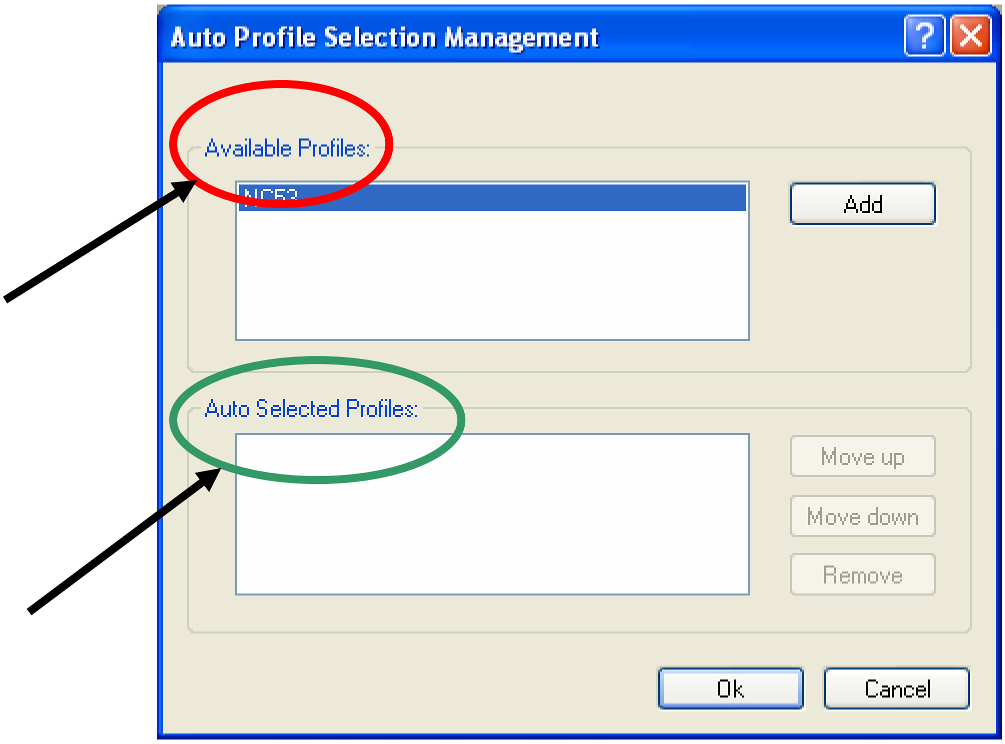
1. Go to the **Profile Management** tab.
2. Select the profile to remove from the list of configuration profiles.
3. Click **Remove**.

3.2.3 Profile Auto Selection

- Including a profile in the auto selection feature allows the wireless adapter to automatically select that profile from the list of profiles and use it to connect to the network.

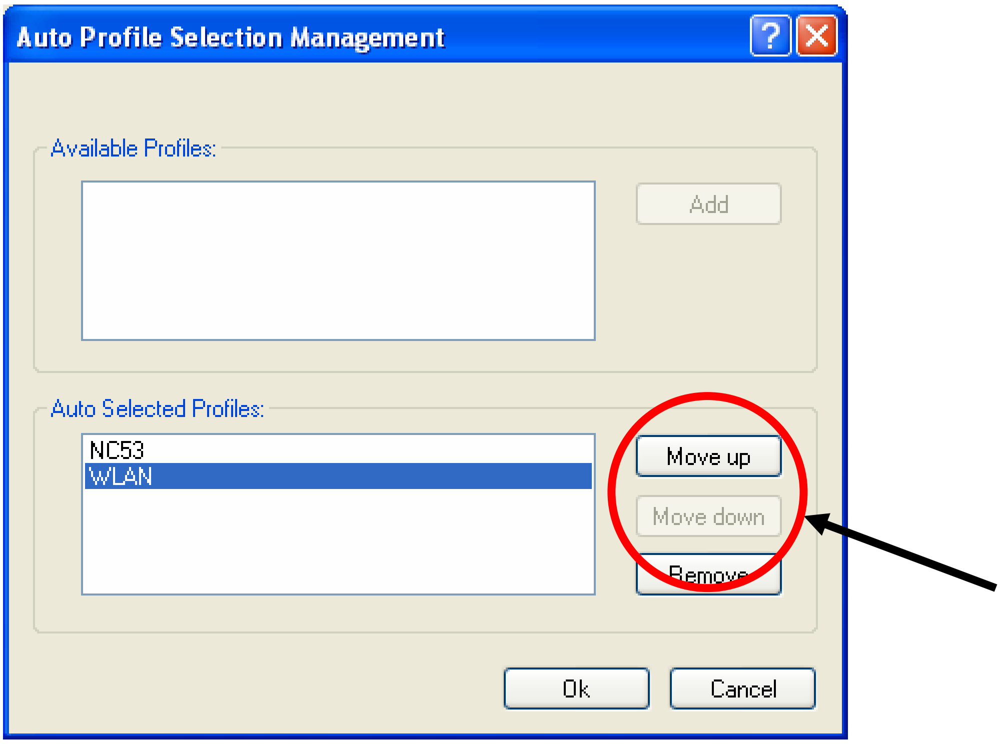
- Including a profile in auto profile selection:

1. On the **Profile Management** tab, click **Order Profiles**.
2. The **Auto Profile Selection Management** window pops up, with a list of all created profiles in the **Available Profile** box.
3. Highlight the profiles to add to Auto Profile selection, then click **Add**. The profiles appear in the **Auto Selected Profiles** box.



- Ordering the auto selected profiles:

1. On the **Profile Management** tab, click **Order Profiles**.
2. Highlight a profile in the **Auto Selected Profiles** box.
3. Click **Move up** or **Move down** as appropriate.

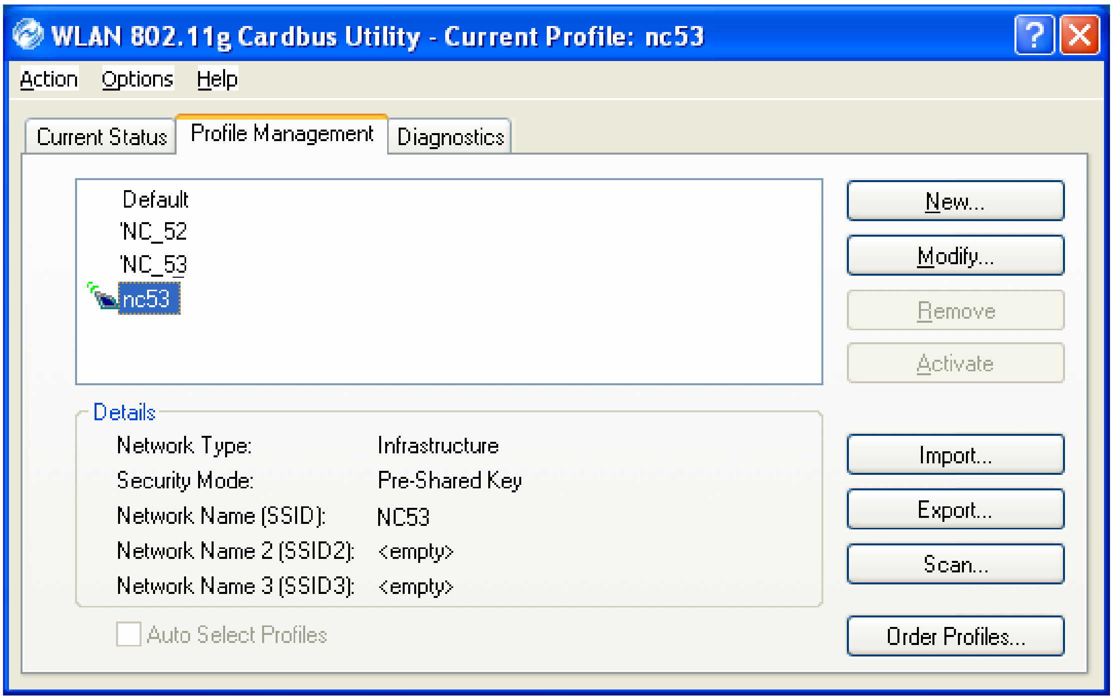


4. Click **OK**.
5. Check the **Auto Selected Profiles** box.
6. Save the modified configuration file.
7. With Auto Profile Selection enabled, the wireless adapter scans for available networks. The highest priority profile with the same SSID as a found network is used to connect to the network. On a failed connection, the client adapter tries with the next highest priority profile.

Note: When **Auto Profile Selection** is enabled by checking **Auto Select Profiles** on the **Profile Management** tab, the client adapter scans for an available network. The profile with the highest priority and the same SSID as one of the found networks is the one that is used to connect to the network. If the connection fails, the client adapter tries the next highest priority profile that matches the SSID, and so on.

3.2.4 Switch Profiles

1. To switch to a different profile, go to the **Profile Management** tab.
2. Click on the Profile Name in the **Profile List**.
3. Click **Activate**.



Default
NC_52
NC_53
nc53

Network Type:	Infrastructure
Security Mode:	Pre-Shared Key
Network Name (SSID):	NC53
Network Name 2 (SSID2):	<empty>
Network Name 3 (SSID3):	<empty>

4. The Profile List provides icons that specify the Operational State for that profile. The list also provides icons that specify the Signal Strength for that profile.

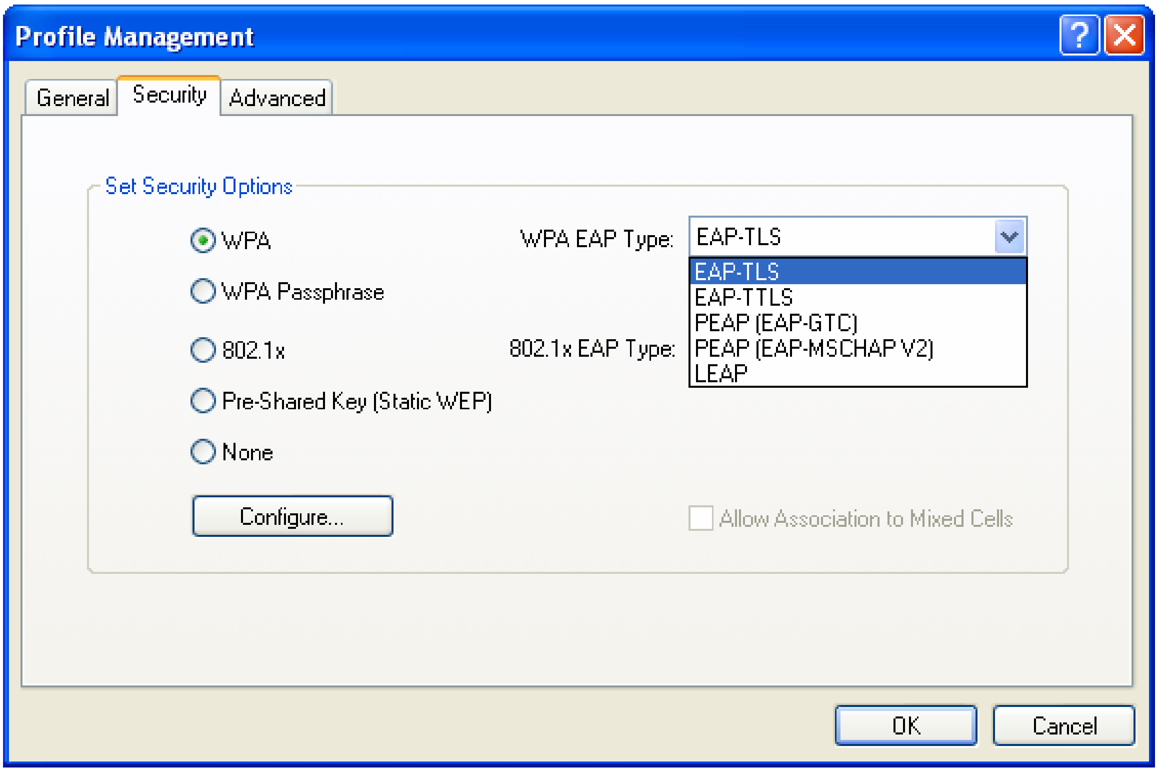
4 Security

You may select **WPA**, **WPA Passphrase**, **802.1x**, **Pre-Shared Key** or **None** in **Set Security Options**.

4.1 Using EAP-TLS Security

To use **EAP-TLS** security in the WLAN 802.11g Cardbus Utility, access the **Security** tab in the **Profile Management** window.

1. On the Security tab, click **WPA** or **802.1x**.
2. Select **EAP-TLS** from the drop-down menu.



Profile Management

Set Security Options

● WPA

○ WPA Passphrase

○ 802.1x

○ Pre-Shared Key (Static WEP)

○ None

WPA EAP Type: EAP-TLS

802.1x EAP Type:

□ Allow Association to Mixed Cells

4.1.1 Enabling EAP-TLS Security

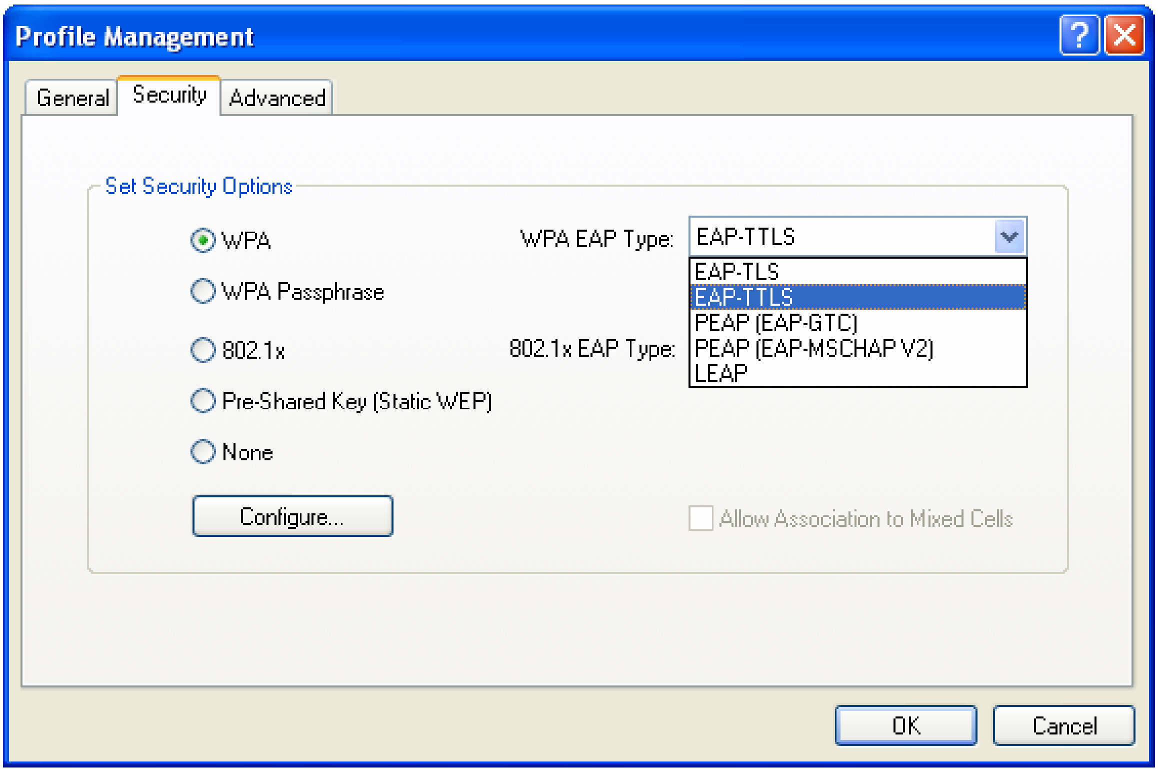
To use EAP-TLS security, the machine must already have the EAP-TLS certificates downloaded onto it. Check with the IT manager.

1. If EAP-TLS is supported, select **EAP-TLS** from the drop-down menu on the right and then click **Configure**.
2. Select the appropriate certificate authority from the list. The server/domain name and the login name are filled in automatically from the certificate information. Click.
3. Click **OK** again.
4. Activate the profile.

4.2 Using EAP-TTLS Security

To use **EAP-TTLS** security in the WLAN 802.11g Cardbus Utility, access the **Security** tab in the **Profile Management** window.

1. On the Security tab, click **WPA** or **802.1x**.
2. Select **EAP-TLS** from the drop-down menu.



Profile Management

Set Security Options

● WPA

WPA EAP Type: EAP-TTLS

4.2.1 Enabling EAP-TTLS Security

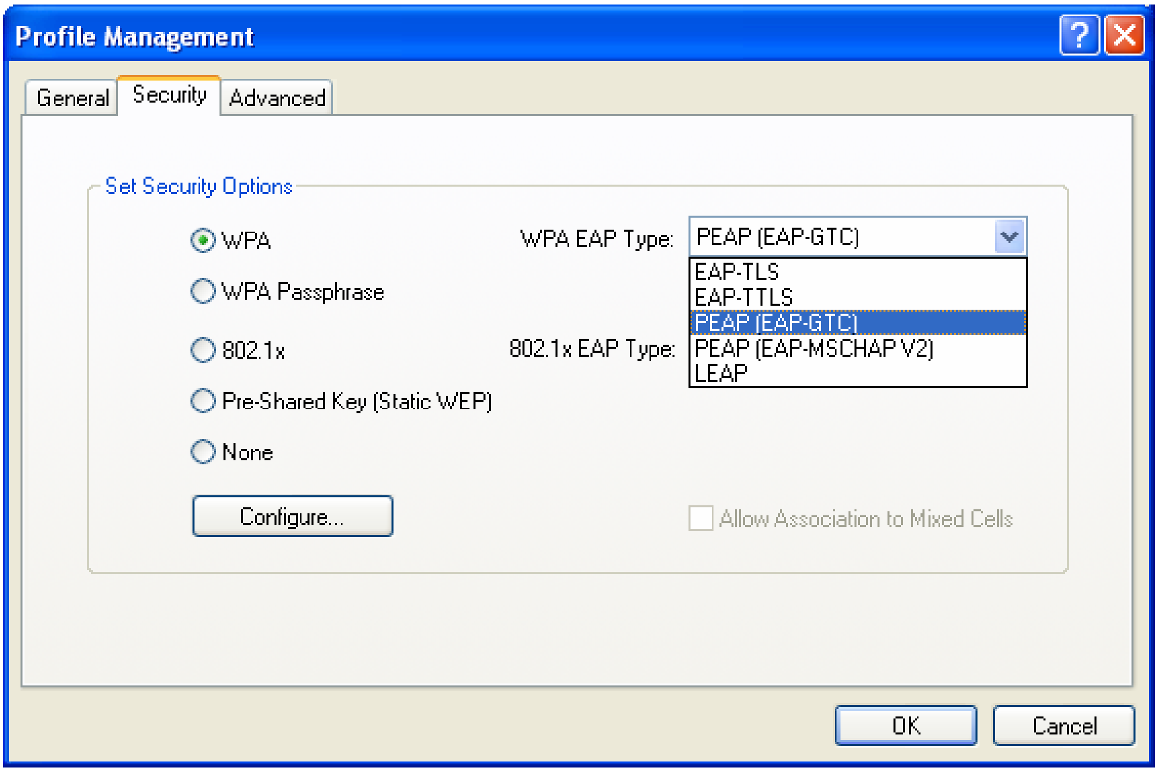
To use EAP-TTLS security, the machine must already have the EAP-TTLS certificates downloaded onto it. Check with the IT manager.

1. If EAP-TTLS is supported, select **EAP-TTLS** from the drop-down menu on the right and then click **Configure**.
2. Select the appropriate certificate from the drop-down list and click **OK**.
3. Specify a user name for EAP authentication:
   - ✓ Check **Use Windows User Name** to use the Windows user name as the EAP user name.
   - ✓ Or: Enter an EAP user name in the User Name field to use a separate user name and password and start the EAP authentication process.
4. Click **Advanced** and:
   - ✓ Leave the server name field blank for the client to accept a certificate from any server with a certificate signed by the authority listed in the Network Certificate Authority drop-down list. (recommended).
   - ✓ Enter the domain name of the server from which the client will accept a certificate.
   - ✓ Change the login name if needed.
5. Click **OK**.
6. Enable the profile.

4.3 Using PEAP-GTC Security

To use **PEAP-GTC** security in the WLAN 802.11g Cardbus Utility, access the **Security** tab in the **Profile Management** window.

1. On the Security tab, click **WPA** or **802.1x**.
2. Select **PEAP-GTC** from the drop-down menu.



● WPA

WPA EAP Type: PEAP (EAP-GTC)

4.3.1 Enabling PEAP-GTC Security

To use PEAP-GTC security, the server must have the PEAP-GTC certificates, and the server properties must already be set. Check with the IT manager.

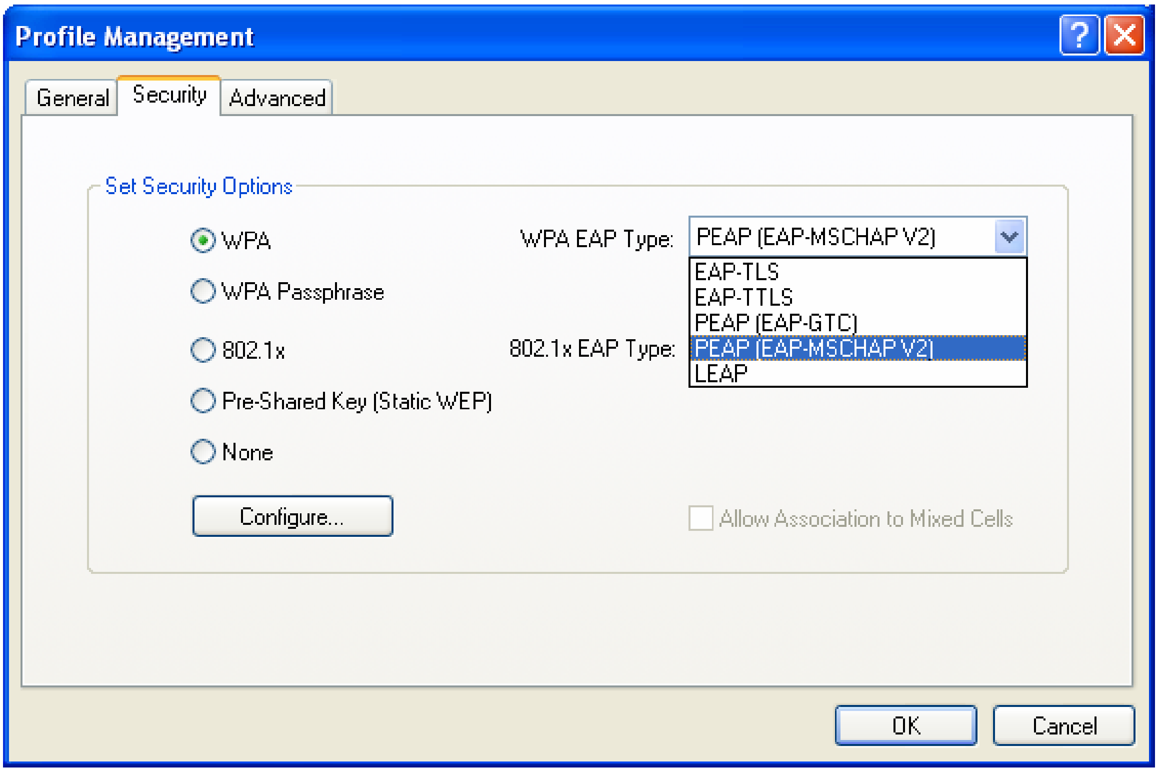
1. Click **Configure**.
2. Select the appropriate network certificate authority from the drop-down list.
3. Specify a user name for inner PEAP tunnel authentication:
   - ✓ Check **Use Windows User Name** to use the Windows user name as the PEAP user name.
   - ✓ Or: Enter a PEAP user name in the User Name field to use a separate user name and start the PEAP authentication process.

4. Select **Token** or **Static Password**, depending on the user database.
   Note: Token uses a hardware token device or the Secure Computing SofToken program (version 1.3 or later) to obtain and enter a one-time password during authentication.
5. Click **Advanced** and:
   - ✓ Leave the server name field blank for the client to accept a certificate form any server with a certificate signed by the authority listed in the Network Certificate Authority drop-down list. (recommended)
   - ✓ Enter the domain name of the server from which the client will accept a certificate.
6. Click **OK**.
7. Enable the profile.

4.4 Using PEAP-MSCHAP V2 Security

To use **PEAP-MSCHAP V2** security in the WLAN 802.11g Cardbus Utility, access the **Security** tab in the **Profile Management** window.

1. On the Security tab, click **WPA** or **802.1x**.
2. Select **PEAP- MSCHAP V2** from the drop-down menu.



Profile Management

Set Security Options

● WPA

WPA EAP Type: PEAP (EAP-MSCHAP V2)

4.4.1 Enabling PEAP- MSCHAP V2 Security

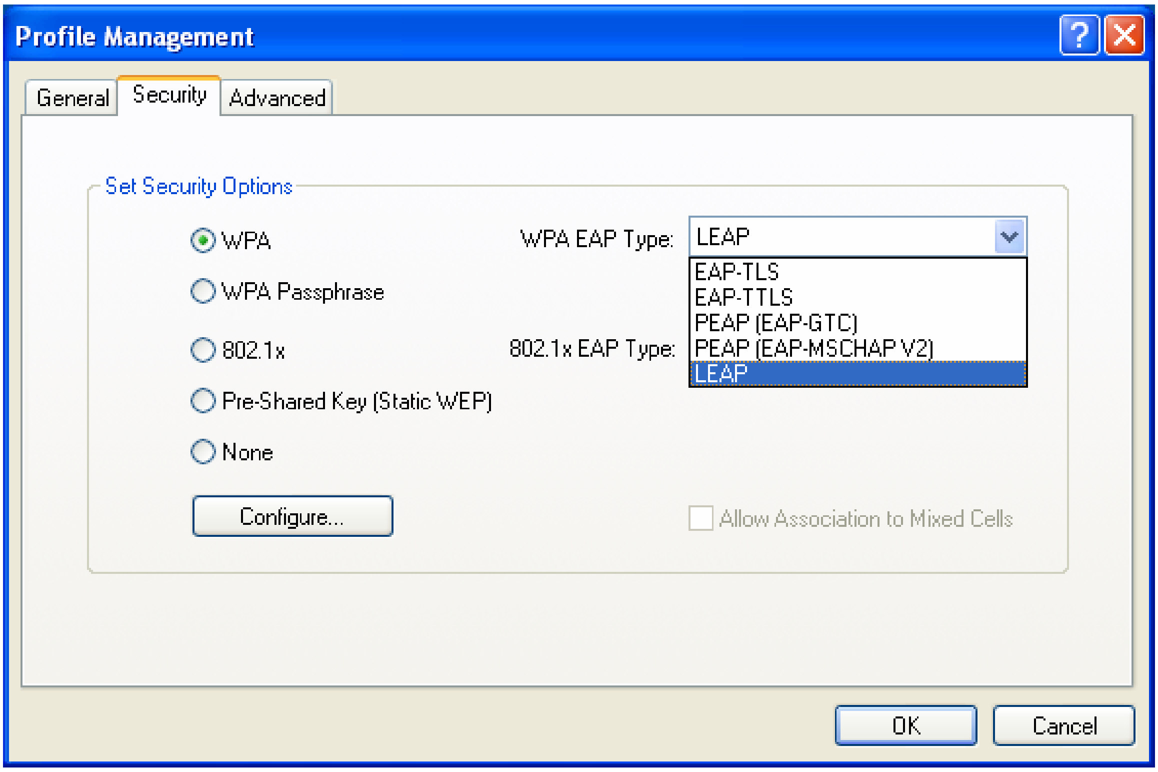
To use PEAP-MSCHAP V2 security, the server must have the PEAP-MSCHAP V2 certificates, and the server properties must already be set. Check with the IT manager.

1. Click **Configure**.
2. Select the appropriate network certificate authority from the drop-down list.
3. Specify a user name for inner PEAP tunnel authentication:
   - ✓ Check **Use Windows User Name** to use the Windows user name as the PEAP user name.
   - ✓ Or: Enter a PEAP user name in the User Name field to use a separate user name and start the PEAP authentication process.
4. Click **Advanced** and:
   - ✓ Leave the server name field blank for the client to accept a certificate form any server with a certificate signed by the authority listed in the Network Certificate Authority drop-down list. (recommended)
   - ✓ Enter the domain name of the server from which the client will accept a certificate.
   - ✓ The login name used for PEAP tunnel authentication, fills in automatically as PEAP-XXXXXXXXXX, where XXXXXXXXXX is the computer's MAC address. Change the login name if needed.
5. Click **OK**.
6. Enable the profile.

4.5 Using LEAP Security

To use **LEAP** security in the WLAN 802.11g Cardbus Utility, access the **Security** tab in the **Profile Management** window.

1. On the Security tab, click **WPA** or **802.1x**.
2. Select **LEAP** from the drop-down menu.



Profile Management

General | Security | Advanced

Set Security Options

● WPA — WPA EAP Type: LEAP

○ WPA Passphrase

○ 802.1x — 802.1x EAP Type:

○ Pre-Shared Key (Static WEP)

○ None

EAP-TLS
EAP-TTLS
PEAP (EAP-GTC)
PEAP (EAP-MSCHAP V2)
LEAP

□ Allow Association to Mixed Cells

4.5.1 Configuring LEAP

1. Click **Configure**.
2. Specify a user name and password:

   Select to **Use Temporary User Name and Password** by choosing the radio button:

   ✓ Check **Use Windows User Name** to the Windows user name as the LEAP user name.

   ✓ Or: Check **Manually Prompt for Leap User Name and Password** to manually login and start the LEAP authentication process.

   Select to **Use Saved User Name and Password** by choosing the radio button:

   ✓ Specify the LEAP user name, password, and domain to save and use.
3. Enter the user name and password.
4. Confirm the password.
5. Specify a domain name:

   ✓ Check the **Include Windows Logon Domain with User Name** setting to pass the Windows login domain and user name to the RADIUS server (default).

   ✓ Or: Enter a specific domain name.

6. If desired, check **No Network Connection Unless Is Logged** to force the wireless adapter to disassociate after logging off.
7. Enter the LEAP authentication timeout time (between 30 and 500 seconds) to specify how long LEAP should wait before declaring authentication failed, and sending an error message. The default is 90 seconds.
8. Click **OK**.
9. Enable the profile.

4.5.2 Enabling LEAP Security

1. Click **Configure**.
2. Specify a user name and password:

   Select to **Use Temporary User Name and Password** by choosing the radio button:
   - ✓ Check **Use Windows User Name** to the Windows user name as the LEAP user name.
   - ✓ Or: Check **Manually Prompt for LEAP User Name and Password** to manually enter a user name and password and start the LEAP authentication process. The system then prompts the user for a user name and password on each login, or when the user chooses **Manual LEAP** Login from the **Action** menu.

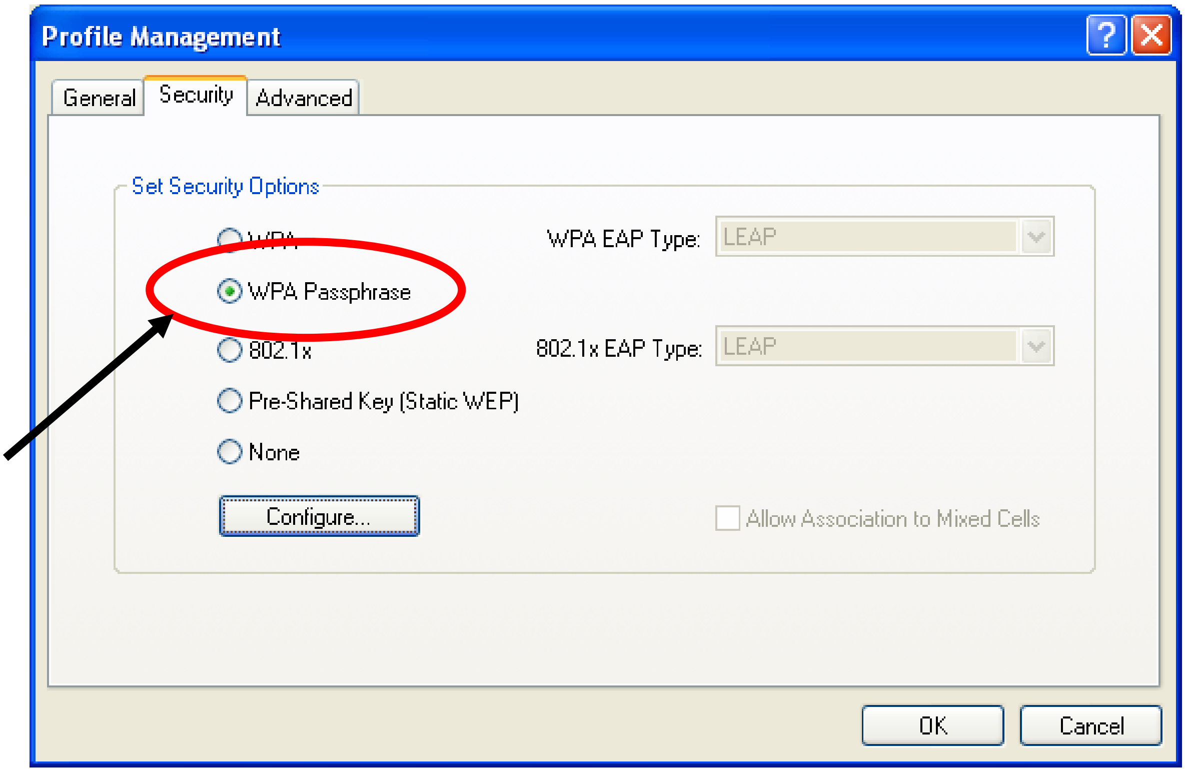
   Select to **Use Saved User Name and Password** by choosing the radio button:
   - ✓ Specify the LEAP user name, password, and domain to automatically authenticate on each login.
3. Enter the user name and password.
4. Confirm the password.
5. Specify a domain name:
   - ✓ Check the **Include Windows Logon Domain with User Name** setting to pass the Windows login domain and user name to the RADIUS server. (default)
   - ✓ Or: Enter a specific domain name.
6. If desired, check **No Network Connection Unless User Is Logged In** to force the wireless adapter to disassociate after logging off.
7. Enter the LEAP authentication timeout time (between 30 and 500 seconds) to specify how long LEAP should wait before declaring authentication failed, and sending an error message. The default is 90 seconds.
8. Click **OK**.

9. Enable the profile.

4.6 Using WPA Passphrase Security

To use **WEAP Passphrase** security in the WLAN 802.11g Cardbus Utility, access the **Security** tab in the **Profile Management** window.

1. On the Security tab, click **WPA** or **802.1x**.
2. Click **Configure**.
3. Fill in the WPA Passphrase.
4. Click **OK**.



Profile Management

General | Security | Advanced

Set Security Options

○ WPA
● WPA Passphrase
○ 802.1x
○ Pre-Shared Key (Static WEP)
○ None

WPA EAP Type: LEAP

802.1x EAP Type: LEAP

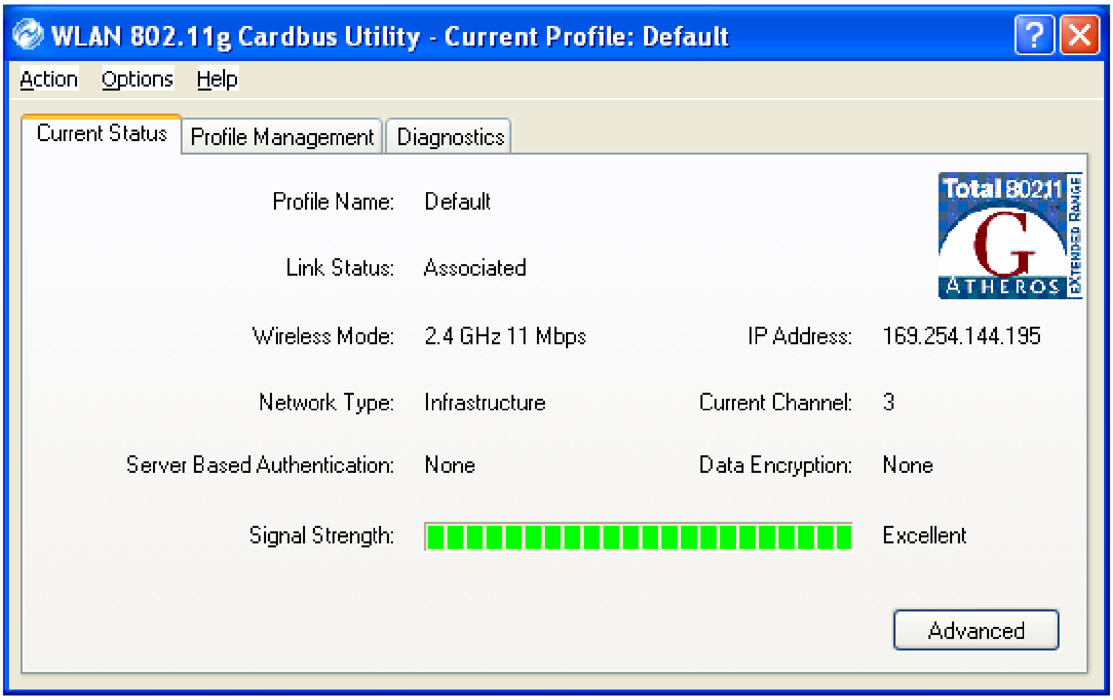
□ Allow Association to Mixed Cells

5 Status Information/Diagnostics

The utility provides you current diagnostics and status information.

5.1 Check Current Status

The Current Status tab contains general information about the program and its operations.


WLAN 802.11g Cardbus Utility - Current Profile: Default
Action
Options
Help
Current Status
Profile Management
Diagnostics
Total 802.11 G ATHEROS EXTENDED RANGE
Advanced

Profile Name: Default

Link Status: Associated

Wireless Mode: 2.4 GHz 11 Mbps

IP Address: 169.254.144.195

Network Type: Infrastructure

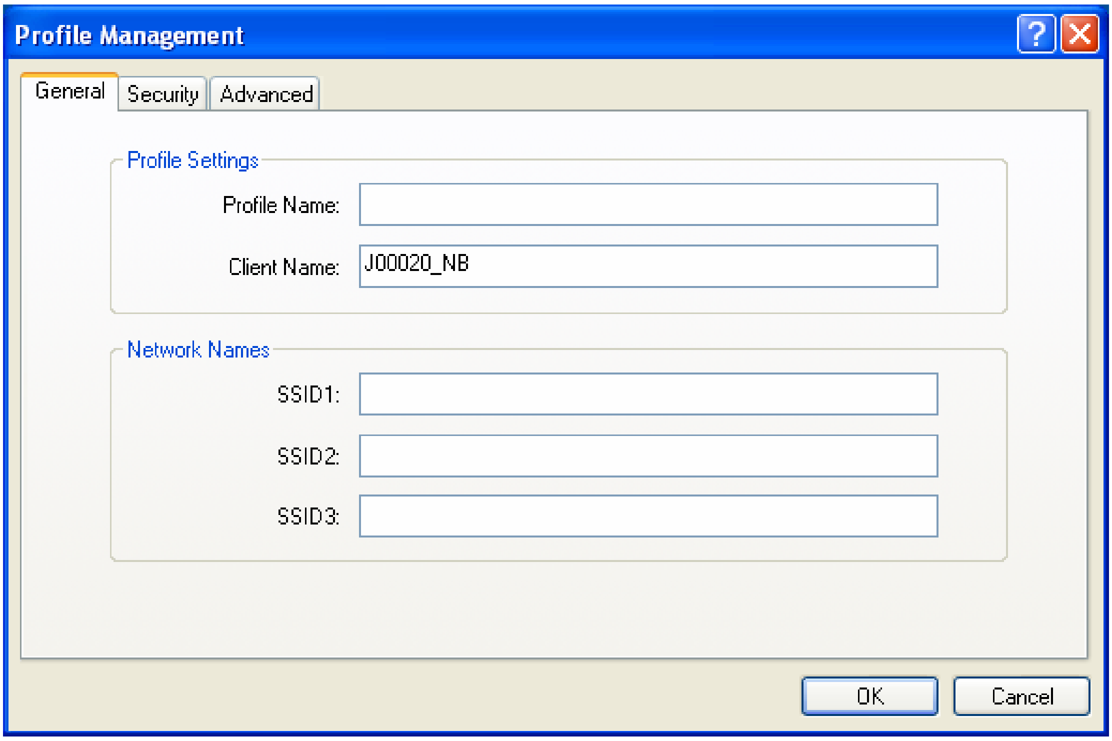
Current Channel: 3

Server Based Authentication: None

Data Encryption: None

Signal Strength: Excellent

- *Profile Name:* ***The name of the current selected configuration profile. If you see Default in Profile Name, it is because you do not assign a specific SSID, and the adapter automatically searches and connects to the most suitable network. You can configure the profile name through <u>Profile Management →Modify→General</u>.***



Profile Settings

Profile Name:

Client Name: J00020_NB

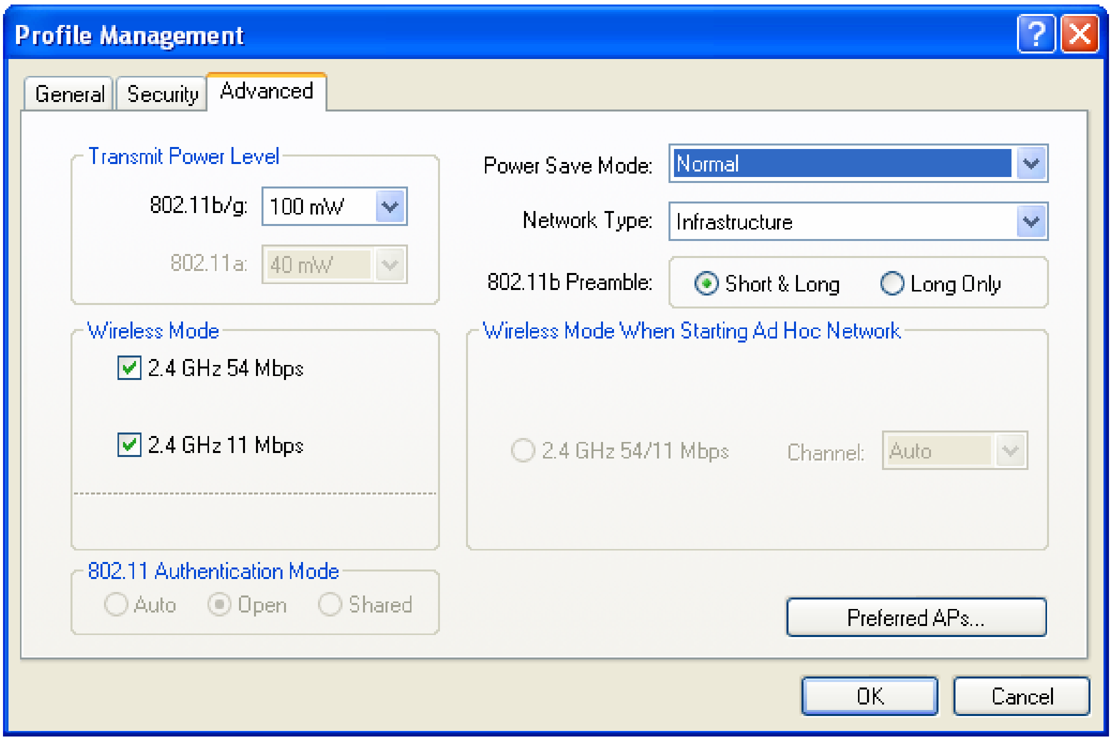
Network Names

SSID1:

SSID2:

SSID3:

- *Link Status:* ***Shows whether or not the station is associated to the wireless network.***
- *Wireless Mode:* ***Displays the wireless mode. You can configure the wireless mode through <u>Profile Management →Modify→Advanced</u>.***



Transmit Power Level

802.11b/g: 100 mW

802.11a: 40 mW

Power Save Mode: Normal

Network Type: Infrastructure

802.11b Preamble: ● Short & Long ○ Long Only

Wireless Mode

☑ 2.4 GHz 54 Mbps

☑ 2.4 GHz 11 Mbps

Wireless Mode When Starting Ad Hoc Network

○ 2.4 GHz 54/11 Mbps Channel: Auto

802.11 Authentication Mode

○ Auto ● Open ○ Shared

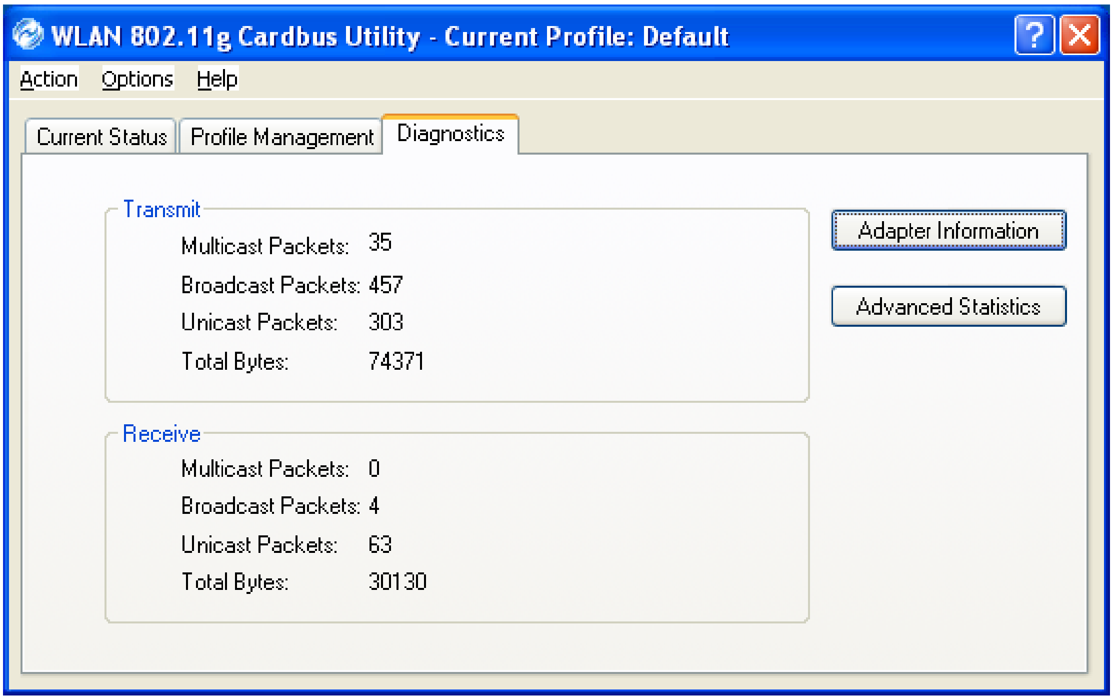
- *IP Address:* ***Displays the computer's IP address.***
- *Network Type:* ***The type of network the station is connected to. The***

options include infrastructure and Ad Hoc. You can configure the network type through Profile Management →Modify→Advanced.

- *Current Channel:* ***Shows the currently connected channel.***
- *Server Based Authentication:* ***Shows whether server based authentication is used.***
- *Data Encryption:* ***Displays the encryption type the driver is using. You can configure Data Encryption through Profile Management →Modify→Security.***
- *Signal Strength:* ***Shows the strength of the signal.***

5.2 Check Driver Information

In Diagnostics tab, click **Adapter Information** to view general information about the network interface card (the wireless network adapter) and the network driver interface specification (NDIS) driver.

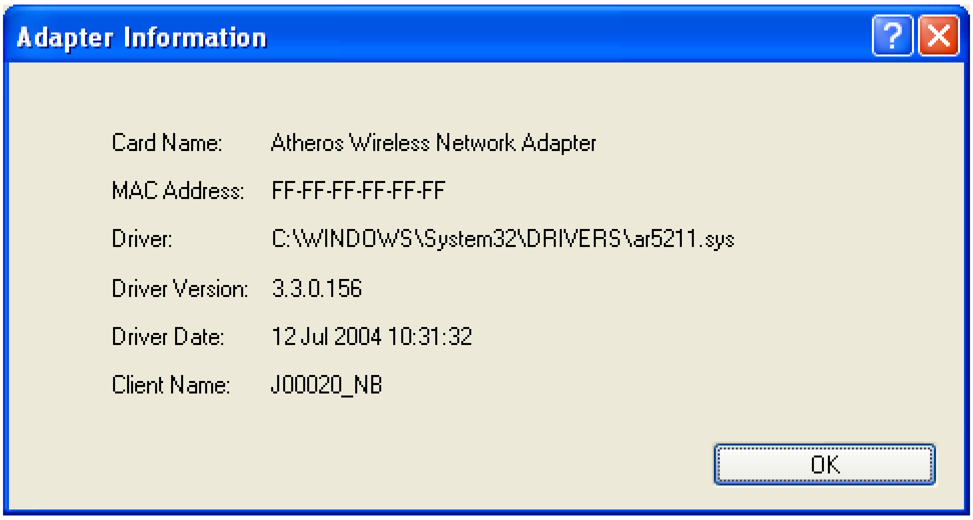


Transmit

Multicast Packets: 35
Broadcast Packets: 457
Unicast Packets: 303
Total Bytes: 74371

Receive

Multicast Packets: 0
Broadcast Packets: 4
Unicast Packets: 63
Total Bytes: 30130



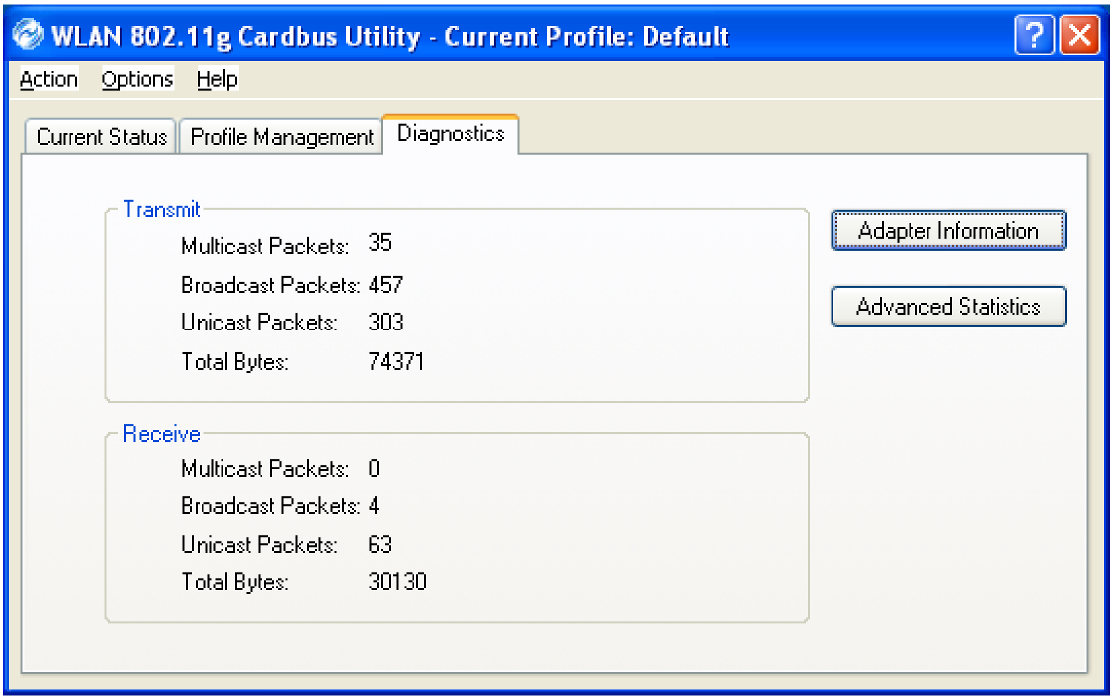
Card Name: Atheros Wireless Network Adapter
MAC Address: FF-FF-FF-FF-FF-FF
Driver: C:\WINDOWS\System32\DRIVERS\ar5211.sys
Driver Version: 3.3.0.156
Driver Date: 12 Jul 2004 10:31:32
Client Name: J00020_NB

- **Card Name:** The name of the wireless network adapter.
- **MAC Address:** The MAC address of the wireless network adapter.
- **Driver:** The driver name and path of the wireless network adapter driver.
- **Driver Version:** The version of the wireless network adapter driver.
- **Driver Date:** The creation date of the wireless network adapter driver.
- **Client Name:** The name of the client computer.

5.3 Check Statistics

The Diagnostics tab lists the following receive and transmit diagnostics for frames received by or transmitted by the wireless network adapter:

- Multicast frames transmitted and received
- Broadcast frames transmitted and received
- Unicast frames transmitted and received
- Total bytes transmitted and received



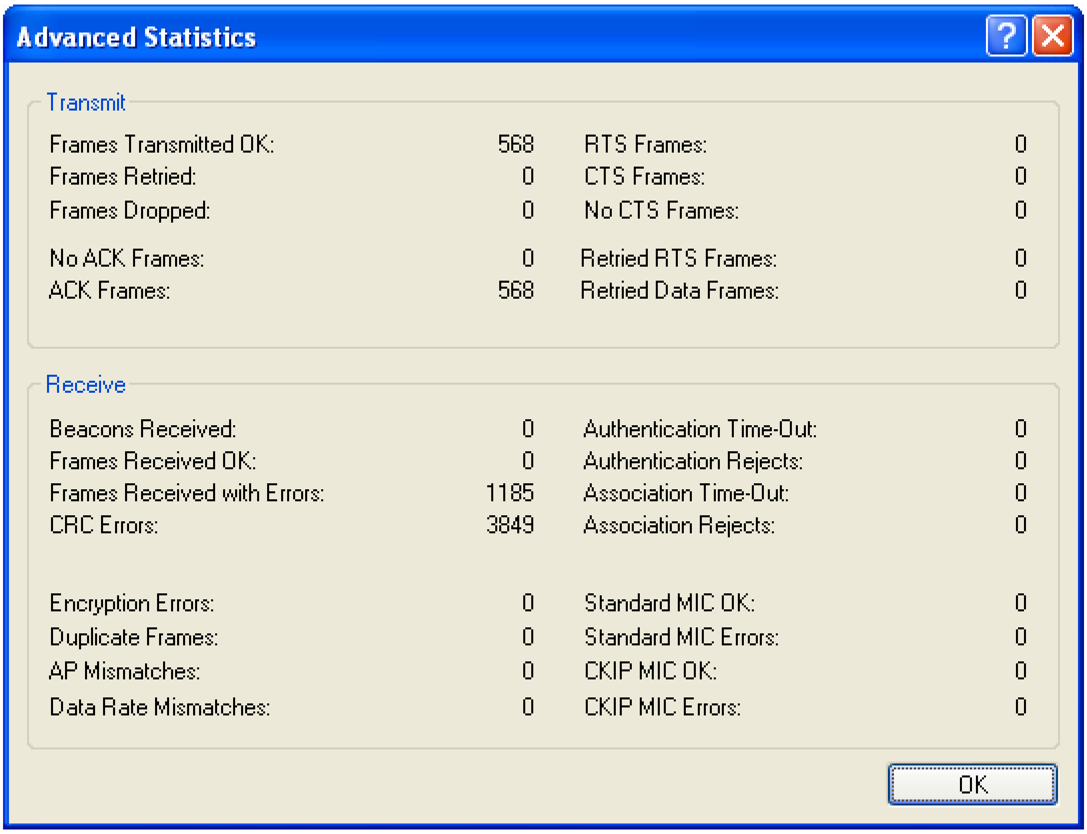
Transmit

Multicast Packets: 35
Broadcast Packets: 457
Unicast Packets: 303
Total Bytes: 74371

Receive

Multicast Packets: 0
Broadcast Packets: 4
Unicast Packets: 63
Total Bytes: 30130

In Diagnostics tab, click **Advanced Statistics** to show receive and transmit statistical information for the following receive and transmit diagnostics for frames received by or transmitted to the wireless network adapter:



Transmit

Frames Transmitted OK: 568
Frames Retried: 0
Frames Dropped: 0
No ACK Frames: 0
ACK Frames: 568
RTS Frames: 0
CTS Frames: 0
No CTS Frames: 0
Retried RTS Frames: 0
Retried Data Frames: 0

Receive

Beacons Received: 0
Frames Received OK: 0
Frames Received with Errors: 1185
CRC Errors: 3849
Encryption Errors: 0
Duplicate Frames: 0
AP Mismatches: 0
Data Rate Mismatches: 0
Authentication Time-Out: 0
Authentication Rejects: 0
Association Time-Out: 0
Association Rejects: 0
Standard MIC OK: 0
Standard MIC Errors: 0
CKIP MIC OK: 0
CKIP MIC Errors: 0

Transmitted Frames:

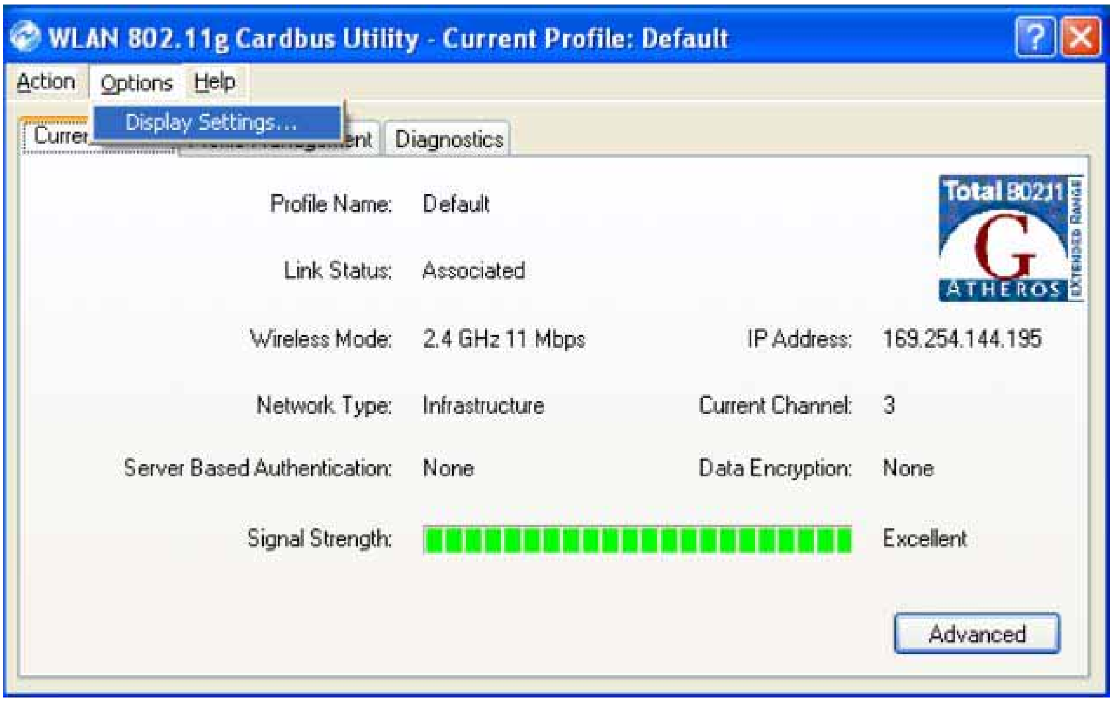
- Frames transmitted OK
- Frames retried
- Frames dropped
- No ACK frames
- ACK frames
- RTS Frames
- Clear-to-send (CTS) Frames
- No CTS frames
- Retried RTS frames
- Retried data frames

Received Frames:

- Frames received OK
- Beacons
- Frames with errors
- CRC errors
- Encryption errors
- Duplicate frames
- AP mismatches
- Data rate mismatches
- Authentication time-out
- Authentication rejects: the number of AP authentication failures received by the wireless network adapter
- Association time-out
- Association rejects: the number of access point authentication rejects received by the wireless network adapter
- Standard MIC OK
- Standard MIC errors
- CKIP MIC OK
- CKIP MIC errors

6 Display Settings

To change the display settings, choose Options > Display Settings from the menu.


WLAN 802.11g Cardbus Utility - Current Profile: Default
Action
Options
Help
Display Settings...
Curre
ent
Diagnostics
Total 802.11 G ATHEROS EXTENDED RANGE
Advanced

Profile Name: Default

Link Status: Associated

Wireless Mode: 2.4 GHz 11 Mbps

IP Address: 169.254.144.195

Network Type: Infrastructure

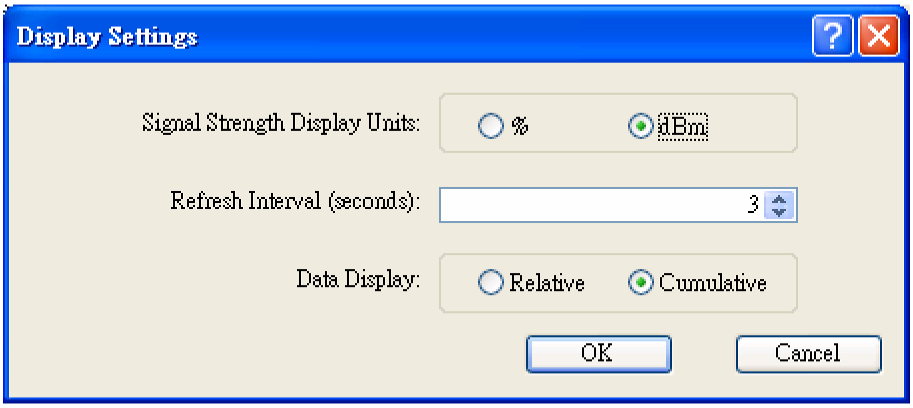
Current Channel: 3

Server Based Authentication: None

Data Encryption: None

Signal Strength: Excellent

The Display Settings dialog box contains tools to set the Signal Strength Display Units, Refresh Interval and Data Display.



Signal Strength Display Units: ○ % ● dBm

Refresh Interval (seconds): 3

Data Display: ○ Relative ● Cumulative

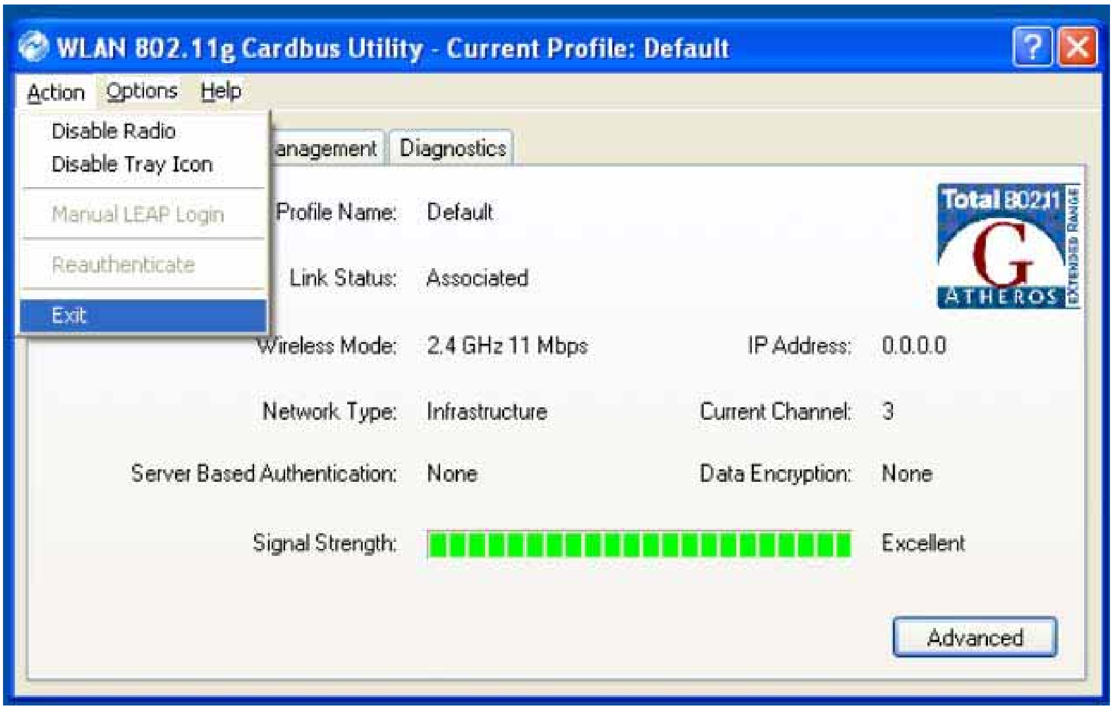
- **Signal Strength Display Units:** Sets the units used when displaying signal strength: percentage (%) or dBm.
- **Refresh Interval:** Use the up/down arrows to set the display refresh interval in seconds.

- **Data Display:** Sets the display to cumulative or relative. Relative displays the change in statistical data since the last update. Cumulative displays statistical data collected since opening the profile.

7. Actions Tools

7.1 Tools

Click Action from the menu to access the tools.



Profile Name: Default

Link Status: Associated

Wireless Mode: 2.4 GHz 11 Mbps

IP Address: 0.0.0.0

Network Type: Infrastructure

Current Channel: 3

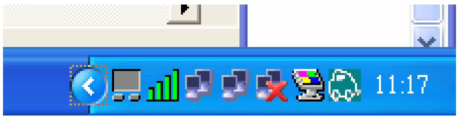
Server Based Authentication: None

Data Encryption: None

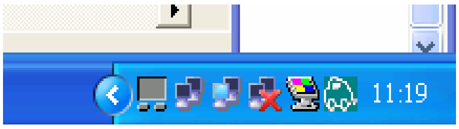
Signal Strength: Excellent

- **Enable/Disable Radio:** Enable or disable the RF Signal.
- **Enable/Disable Tray Icon:** Enable or disable the tray icon. See Chapter 7.2 for details.

Enabled:



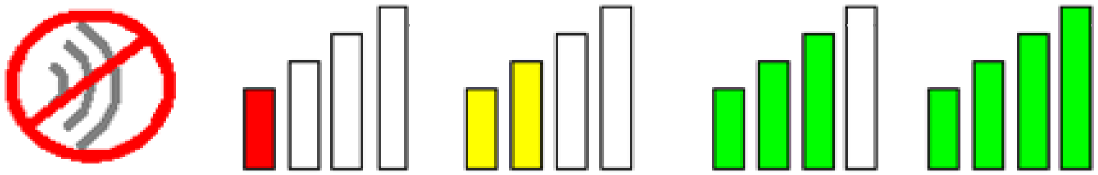
Disabled:



- **Manual LEAP Login:** Log in to LEAP manually, if LEAP is set to manually prompt for user name and password on each login. See Chapter 4 Security for enabling LEAP.
- **Reauthenticate:** Reauthenticate to a LEAP-configured access point.
- **Exit:** Exit the Utility application.

7.2 Tray Icon

The tray icon appears at the bottom of the screen, and shows the signal strength using colors and the received signal strength indication (RSSI).



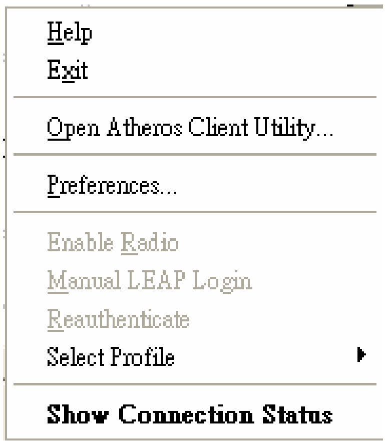
Hold the mouse cursor over the tray icon to display the current configuration profile name and association, as well as transmit and receive speed and the wireless adapter name.

The colors are defined as follows:

Color	Quality	RSSI*
Green	Excellent	20dB+
Green	Good	10-20dB+
Yellow	Poor	5-10dB
Red	Poor	<5dB
Gray	No Connection	No Connection

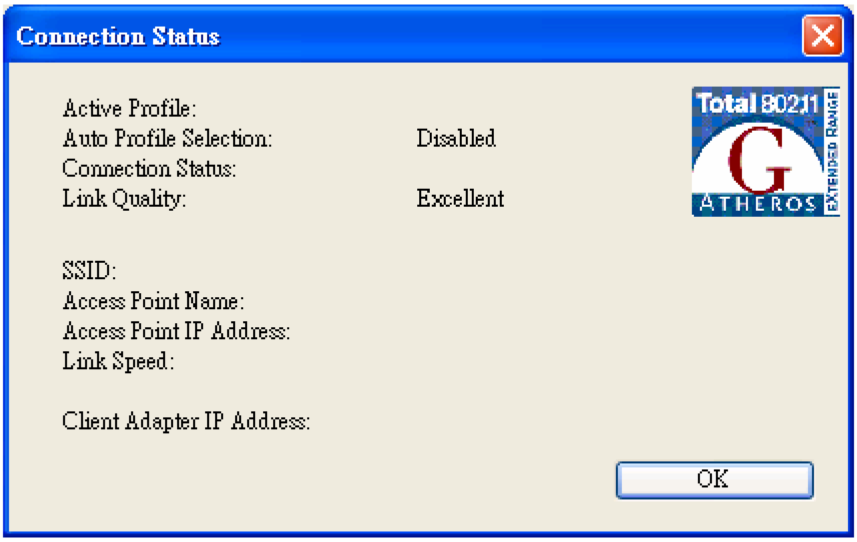
*Received signal strength indication RSSI. Displayed in dB or percentage (see Chapter 6 Display Settings).

Right-click on the tray icon to access the following options:



- **Help:** Open the online help.
- **Exit:** Exit the Utility application.
- **Open Utility:** Launch the Utility.
- **Preferences:** Set the startup options and menu options for the Utility. Check whether the program should start automatically when Windows starts, and check the menu items that should appear on the popup menu.
- **Enable/Disable Radio:** Enable or disable the RF Signal.
- **Manual LEAP Login:** Log in to LEAP manually, if LEAP is set to manually prompt for user name and password on each login. See Chapter 4 Security for enabling LEAP.
- **Reauthenticate:** Reauthenticate to a LEAP-configured access point.
- **Select Profile:** Click a configuration profile name to switch to it. If no configuration profile exists for a connection, see Chapter 3 Profile Management to add a profile first.

- **Show Connection Status:** Display the Connection Status window.



Connection Status

Active Profile:	
Auto Profile Selection:	Disabled
Connection Status:	
Link Quality:	Excellent
SSID:	
Access Point Name:	
Access Point IP Address:	
Link Speed:	
Client Adapter IP Address:	

8 Product Specification

Item	Key Specification
Main Chipset	➢ AR2413-BGA Single Chip (w/o Super G function) ➢ AR2414-BGA Single Chip (w/Super G function)
Frequency Technique	➢ USA: 2.400-2.483GHz ➢ Europe: 2.400-2.483GHz ➢ Japan: 2.400-2.483GHz ➢ China: 2.400-2.483GHz
Modulation Technique	➢ 802.11b DSSS (DBPSK, DQPSK, CCK) ➢ 802.11g OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
Host Interface	➢ 32-bit Cardbus
Channels Support	➢ US/Canada: 11 (1~11) ➢ Major European Country: 13 (1~13) ➢ France: 4 (10~13) ➢ Japan: (802.11b) 14 (1~13 or 14th) (802.11g) 13 (1~13) ➢ China: 13 (1~13)
Operation Voltage	➢ 3.3V +/-5%
Current Consumption	➢ 802.11b FTP Tx: 430mA FTP Rx: 310mA Standby Mode: 250mA Power Saving Mode: 50mA RF Kill: 40mA ➢ 802.11g FTP Tx: 410mA FTP Rx: 310mA Standby Mode: 270mA Power Saving Mode: 50mA RF Kill: 40mA

Output Power	➢ 802.11b 18dBm ➢ 802.11g 18dBM (@6Mbps) 802.11g 15dBM (@54Mbps)
Operation Distance	➢ 802.11b Outdoor: 300m@11Mbps 400m@1Mbps Indoor: 30m@11Mbps 50m@1Mbps ➢ 802.11g Outdoor: 80m@54Mbps 300m@6Mbps Indoor: 15m@54Mbps 35m@6Mbps
Operation System Supported	➢ Windows® 98SE, Me, 2K, XP
Dimension	➢ 108.2mm (L) x 55.2mm (W) x 5.5mm (H)
Security	➢ 64-bit/128-bit/152-bit WEP Encryption ➢ 802.1x Authentication ➢ AES-CCM & TKIP Encryption
Operation Mode	➢ Infrastructure ➢ Ad Hoc Mode
Transfer Data Rate	➢ 802.11b/g 11, 5.5, 2, 1Mbps, auto-fallback, up to 54Mbps ➢ 802.11g (Super G) up to 108Mbps
Operation Temperature	➢ 0^0C~70^0C
Storage Temperature	➢ -20^0C~80^0C
Wi-Fi Alliance	➢ WECA Compliant
WHQL	➢ Microsoft®2K, XP Complaint
FAA	➢ S/W Audio On/Off Support
EMC Certificate	➢ FCC part 15 (USA) ➢ IC RSS210 (Canada) ➢ Telec (Japan) ➢ ETSI, EN301893, EN60950 (Europe)
Advance Function	➢ Super G ➢ Extended Range